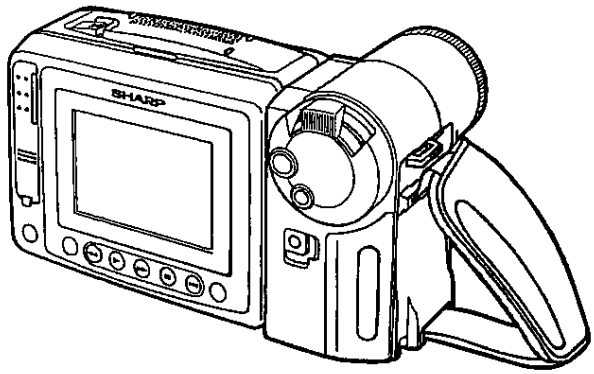
VL-E610S/VL-E610H
VL-E660S/VL-E96E
VL-E98E

SHARP SERVICE MANUAL

S68R5VL-E610S

LIQUID CRYSTAL CAMCORDER 8 PAL



VL-E610S
VL-E610H
VL-E660S
VL-E96E
MODELS VL-E98E

In the interests of user-safety (Required by safety regulations in some countries) the set should be restored to its original condition and only parts identical to those specified be used.

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SHARP CORPORATION

1. SPECIFICATIONS

Signal System:	PAL standard
Recording System:	2 rotary heads, helical scanning system
Cassette:	8 mm video tape, MP type
Recording/Playback Time:	120 minutes (P5-120)
Tape Speed:	20.051 mm/second
Pickup Device:	1/4" (6.4mm, effective size: 4.5 mm) CCD image sensor with approx. 320,000 pixels including optical black
Lens:	16 × power zoom lens (F1.4, f=4.0-64.0 mm) and full-range auto focus
Lens Filter Diameter:	46 mm
Monitor:	3" (7.5 cm)—full-color LCD screen (TFT active matrix)
Microphone:	Electret monaural microphone
Color Temperature Compensation:	Auto white balance
Minimum Illumination:	0.8 lux* (5 lux measured by EIA standard) (with gain-up, F1.4)
Video Output Level:	1.0 Vp-p 75-ohm unbalanced
Audio Output Level:	–8 dBs, impedance less than 2.2 kohms
Speaker Output:	200 mW
Power Requirement:	DC 3.6V
Power Consumption:	E610S/E610H/E96E:4.8W (during camera recording in full auto mode with zoom motor off, and backlight in normal mode) E660S/E98E:4.9W (during camera recording in full auto mode with zoom motor off, Extend Zoom, DIS and Snapshot functions off, and backlight in normal mode)
Operating Temperature:	0°C to + 40°C (32°F to 104°F)
Operating Humidity:	30% to 80%
Storage Temperature:	–20°C to +60°C (–4°F to 140°F)
Dimensions (approx.):	182 mm (W) × 109 mm (H) × 99 mm (D)
Weight (approx.):	690g (without battery pack, lithium battery, video cassette, and lens cap)

AC Adapter/Battery Charger UADP-0280TAZZ UADP-0281TAZZ(VL-E610H)

Power Requirement:	AC 110-240 V, 50/60 Hz
DC Output:	4.5 V
Power Consumption:	16 W
Dimensions (approx.):	75 mm (W) × 51 mm (H) × 130 mm (D)
Weight (approx.):	220 g

Battery Pack BT-H22

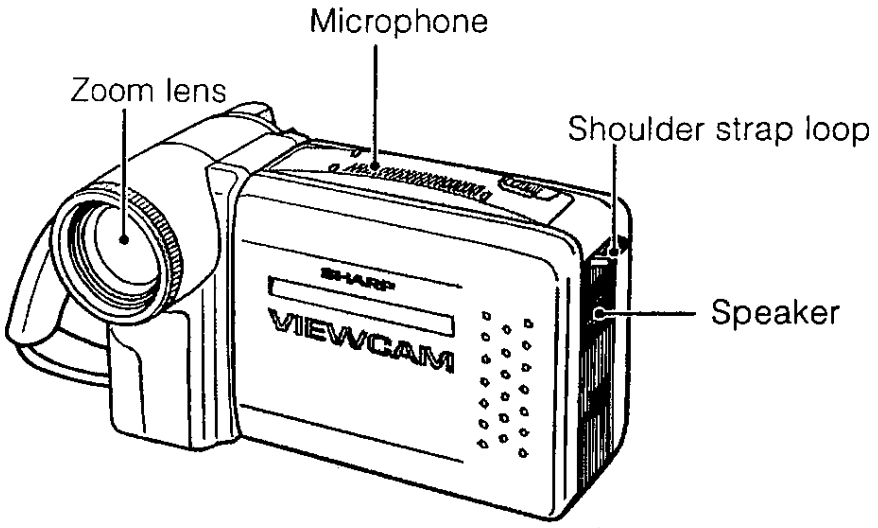
DC Output:	3.6V
Dimensions (approx.):	2 1/8" (W) × 3/4" (H) × 2 7/32" (D) [54 mm (W) × 19 mm (H) × 56 mm (D)]
Weight (approx.):	0.30 lbs (136 g)

*(VL-E610S, VL-E660S, VL-E96E)
Specifications are subject to change without notice.

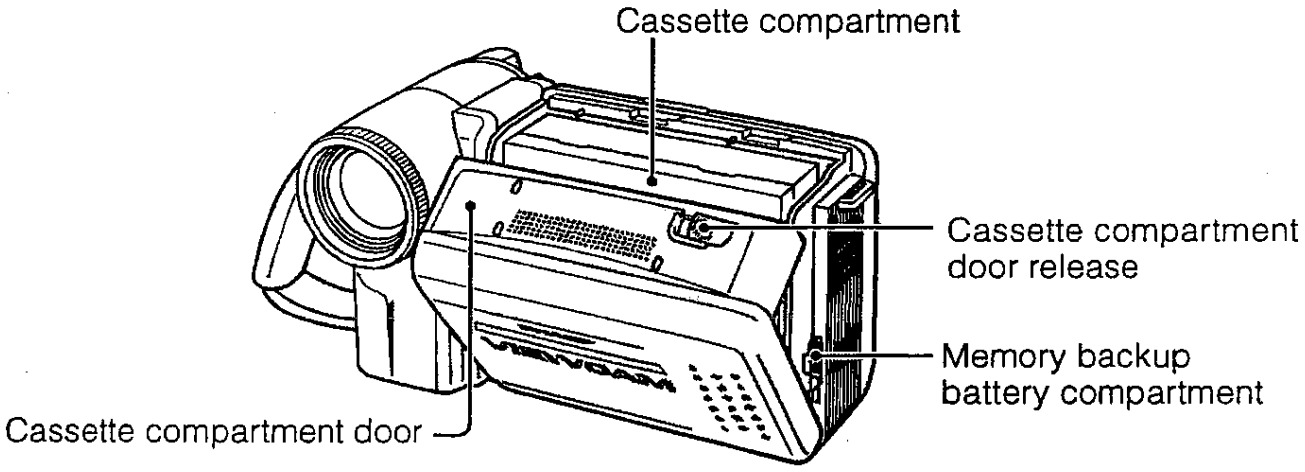
2. PART NAMES AND FUNCTION

For details on the use of each control.

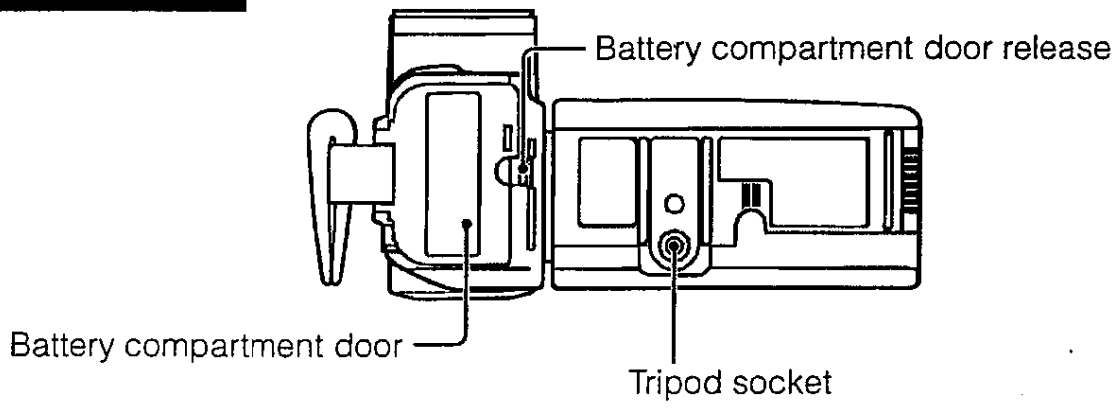
Front view



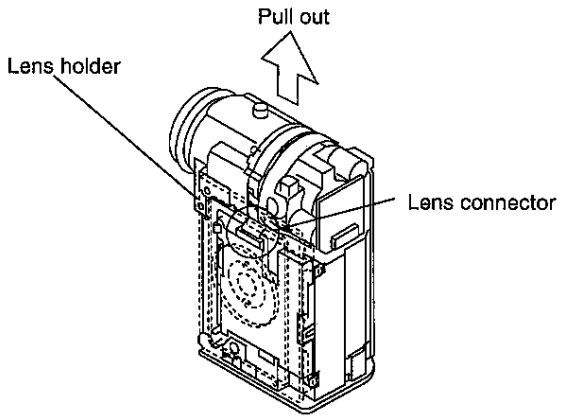
When the cassette compartment door is open



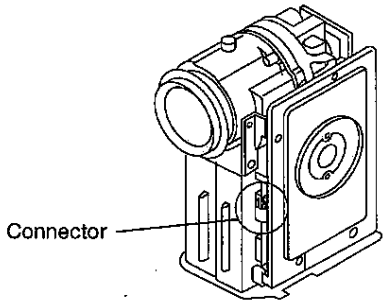
Bottom view

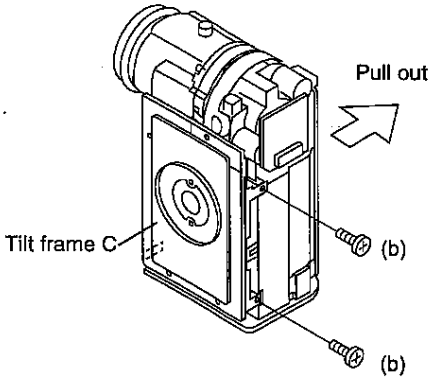


5. Pulling the lens holder, and pull out the lens upwards. Then, remove the lens connector.



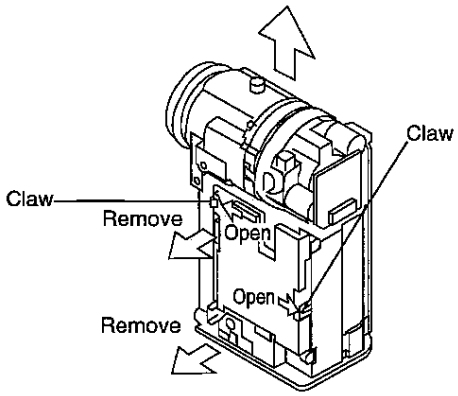
6. Remove one connector and two screws ((b)LX-HZ0018TAFF) and pull out the lens unit from the tilt frame C.

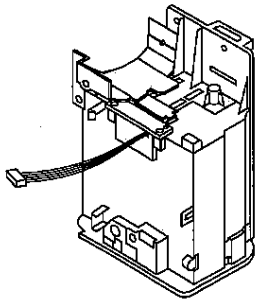




Note:
Be careful so as not to damage the FPC since the camera PWB unit is connected to the lens unit with the FPC attached.

7. Remove the camera PWB unit and the lens unit together, opening two claws of the battery holder outward.

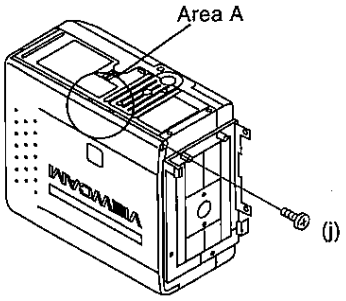




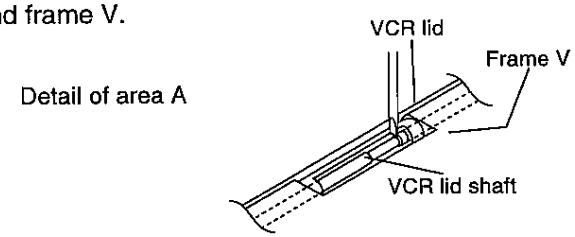
3-2. Disassembly of the VCR main body

1. Removal of the VCR lid shaft

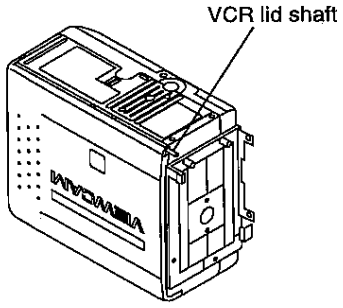
(1)Remove one screw ((j)LX-HZ0063TAFC).



(2)Bring the jig (example: slotted precision screwdriver) into contact with the removal groove of the VCR lid shaft, and slide the screwdriver with care to prevent injuring the VCR lid and frame V.

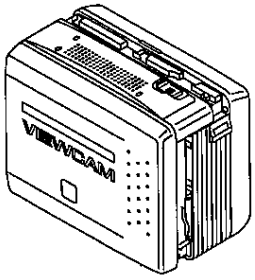


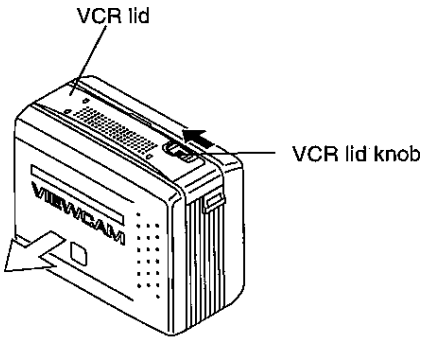
(3)Pull out the VCR lid shaft head which projects beyond the surface of the VCR lid.



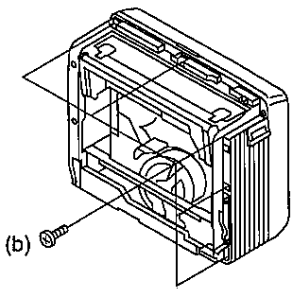
2. Disassembly of the cabinet L

(1)Slide the "VCR lid knob" in the arrow direction, and slide the VCR lid in the arrow direction as far as the cabinet L fastening screw is visible. (Left figure) Since the connector of the microphone is still connected, take care to prevent excessively sliding the VCR lid.



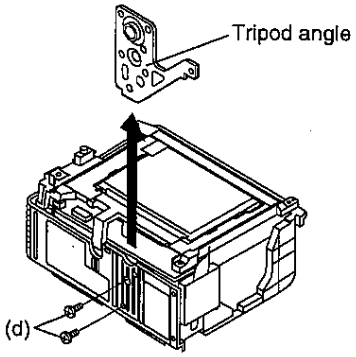


(2)Remove five screws ((b)LX-HZ0018TAFF).

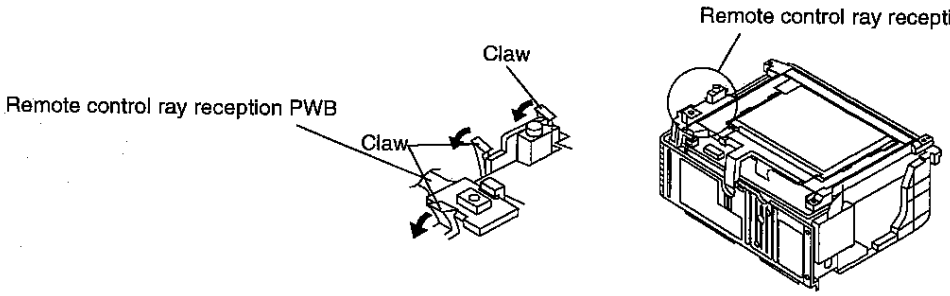


5. Disassembly of the LCD holder

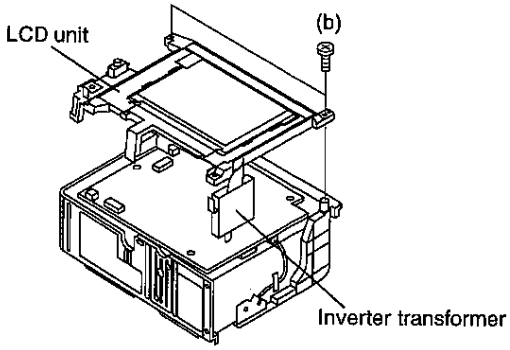
(1)Remove two screws ((d)XiPSF20P04000), pull out the tripod angle.



(2)Remove the remote control ray reception PWB from the LCD, (Distorting the claw (snap-fit type) of the LCD holder, release its engagement.)



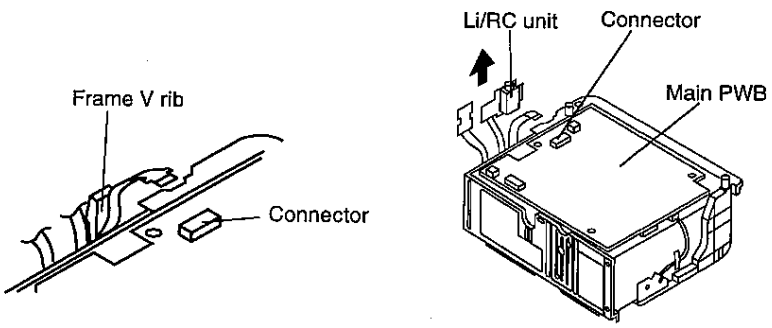
(3)Remove two screws ((b)LX-HZ0018TAFF) and two connectors, and remove the LCD unit (with inverter) from the main body.



(4)Disconnect the connector which connects the Li/RC unit to the main PWB, and slide the Li/RC unit in the arrow direction from the frame V.

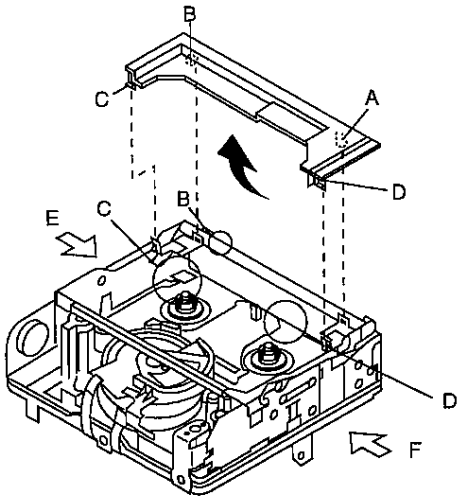
Note:

When connecting the FPC, pass it through the inside of rib of frame V (to prevent the FPC from being jammed).



6. Removal of the cassette compartment lid

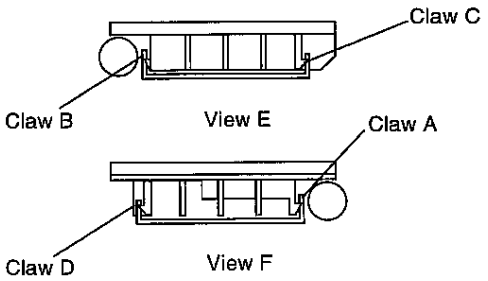
(1)Using the slotted precision screwdriver, push and turn the two claws (C and D) which fasten the cassette compartment lid, and the cassette compartment lid will be removed from the hook area of the cassette component.



(2)Turning the cassette compartment lid in the arrow direction, lift it, and the claws A and B will be disengaged to remove the cassette compartment lid.

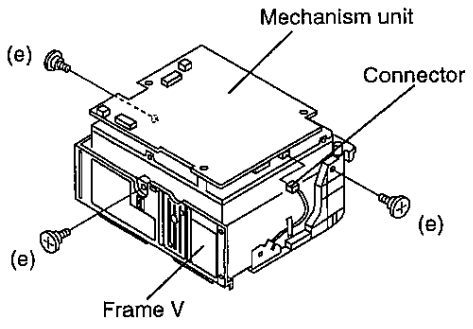
Note:
Take care to prevent breaking the claws of the cassette compartment lid.

Note:
When fixing the cassette compartment lid, first engage the claws A and B, and then engage the claws C and D, verify that the four claws (A, B, C and D) of the cassette compartment lid are securely engaged as shown in the view below.



7. Disassembly of the frame V

(1)Remove three screws ((e)LX-BZ0191TAFD) and one connector, and remove the frame V from the main body.



3-4. INITIAL SETTING OF E²PROM IC

3-4-1. E²PROM data alterable ways

1) Set the switch of main body to VCR, and use the remote control (RRMCG0033TASA) for adjustment to turn on the adjustment mode.

2) VCR adjustment address setting.
   V ADJ
   00 "00" is blinking
   After an objective address was established, play key is pushed and set.
   In addition, numerical change uses a "REW" or "FF" key.

3) VCR adjustment data setting.
   V ADJ
   00 ## Value of "##" differs by an address.
   After an objective data was established, "PLAY" key is pushed and set.

4) When data of other address are changed successively, push "STOP" key, and please repeat operation to 5) from 3).

5) When SW of the substance is turned into off, data are written to E²PROM from systematic microcomputer.

3-4-2. IC702 (E²PROM)

When the IC702 has been replaced, make the following settings and adjustments.

1. Remove the backup battery (CR2025)
2. Turn power switch to CAMERA
3. Setting up the V ADJ mode as follows.

* After press the CONTINUE key, press the VCR ADJ key on service remote control (RRMCG0033TASA).

address	E610S data	E610H data	E660S data	E96EX data	E98EX data
02	0A	0A	0A	0B	0B
0A	F5	F5	F5	F4	F4
03	80	88	B0	88	FA
0B	7F	77	4F	77	05
05	00	00	00	40	40
0D	FF	FF	FF	BF	BF
01	00	00	00	00	00
04	00	00	00	00	00

4. After setting the above data, clear the V ADJ mode and turn off the power by pull out the battery pack or DC cable. Neglect about 30 seconds after turned of power, because data of address becomes effective after microcomputer is reset.

   Now the setting of data is completion.

Adjustments to follow
Make the system controller servo, VCR, and LCD adjustments according to their respective instructions.

3-4-3. CAMERA ADJUSTMENT

When the IC2 has been replaced, make the camera adjustment according to its instructions.
All the camera adjustment data are written in the E²PROM provided on the lens unit. Therefore, when the lens is replaced, the camera must be adjusted again according to the camera adjusting procedure.

3-5. ADJUSTING THE Y/C, AUDIO AND LCD CIRCUITS ON MODELS WITHOUT A/V IN MODE (A/V IN MODE SET-UP PRODUCE)

1) Set the switch of main body to VCR, and use the remote control (RRMCG0033TASA) for adjustment to turn on the adjustment mode.

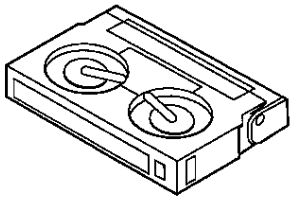
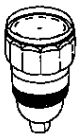
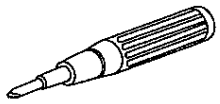
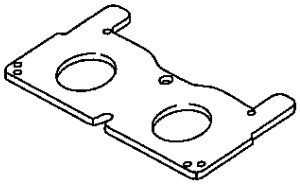
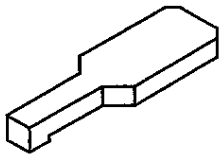
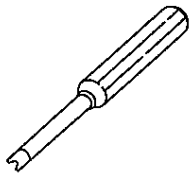
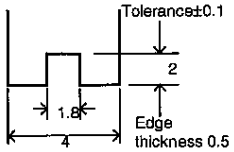
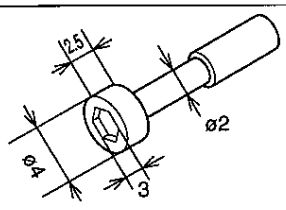
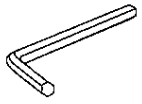
2) Set up the adjustment address (example : EEmode adjustment address 14). Once this address has been set up, the A/V IN mode (test mode) is automatically brought and the images appear on the LCD display.

3) Now make the adjustments referring to the instruotions in the manual.

4. MECHANISM ADJUSTMENT

4-1. Mechanism checking/adjusting jigs, tools and parts

4-1-1. Mechanism checking/adjusting jigs and tools

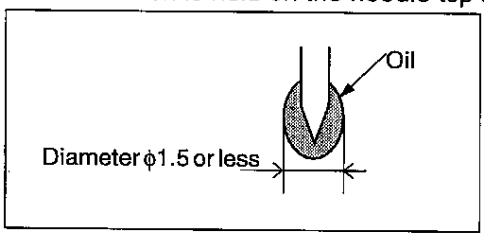
No.	Name	Part No.	Code	Configuration	Model, Uses	Remarks
1	Cassette torque meter for PB	JiG8T-012	CV		• (10 g.cm/25 g.cm)	
2	Cassette torque - meter for VS-REW	JiG8T-032	CV		• (50 g.cm/25 g.cm)	
3	Torque gauge	JiGTG0045	CN		• For measurement of loading braketorque	
4	Torque gauge head	JiGTH-MX7U	BS		• For torque gauge listed above	
5	Torque driver (1.5 kg.cm)	JiGTD1500RTDH	CB			
6	Master plane	JiGMP-MX7U	CG		• For adjustment of Tu guide height • For adjustment of Si roller height • For checking of reel disk height	
7	Height adjusting jig	9DAGH-E31S	BM		• For adjustment of Tu guide height • For adjustment of Si roller height	
8	Guide roller height adjusting driver	JiGDRiVERHMX7U	BU		Bit shape (See the figure below) 	
	Tu guide height adjusting driver	9EQDRiVER-V712	BL			
9	Hex wrench	1.3mm			• For loosening or tightening of Motor stator	

4-2-2. Notes and cautions

(1) Any cut washers, once removed for parts replacement or for other reason, must be replaced with new ones.

(2) The mechanism of this VCR does not involve any volume adjustment. If the specified range is not satisfied, either cleaning or replacing the parts is required.

(3) Oils
a) Be sure to use the specified oils (different viscosity may cause troubles).
b) For the bearings, be sure to use oil that is free form dust and other foreign substances. (Dust or foreign substance contained in the oil may cause wear or seizure of the bearings.)
c) A drop of oil represents the amount of oil which is held on the needle top as shown in the figure below.



(4) The circuit repair must be executed without removing the V frame.

(5) For operating the mechanism alone, actuate it with the motor. The terminal-to-terminal voltage must be DC4V or less.

(6) When installing the cassette control, press the part A shown below. Do not press other parts.

(7) Take care so that the whole mechanism is not deformed.

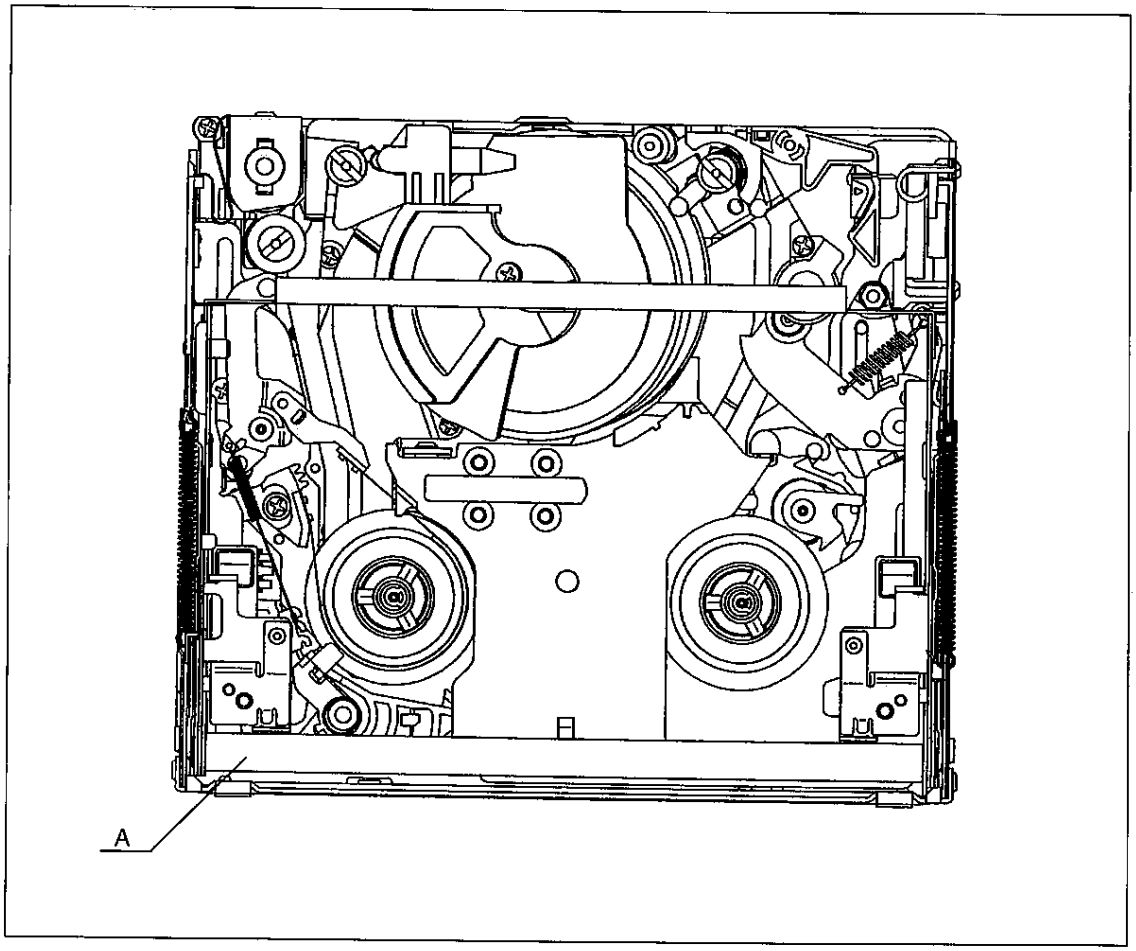


Figure 1

4-3. Mechanism checks and adjustments

The description given below relates to the general field services, but does not relate to the adjustment and replacement that require high level equipments, jigs, and technical skills.
In order to maintain the initial characteristics of the machine, it is necessary to execute the maintenance and check and to prevent damage to tapes and other parts. For adjustments which need jigs, be sure to use the jigs.

Notes and cautions

(1) For mechanism checks and adjustments, be sure to use the AC adapter as the power supply.

(2) For running the tape, be sure to install the cassette control ass'y in advance. (If the cassette control ass'y is to be removed subsequently after its installation.)

4-3-1. Checking the reel disk height

(1) Remove the cassette control ass'y.

(2) Taking due care not to let the master plane touch the tape running areas such as the drum and the guide rollers, position the master plane so that the two guides (A and B in the figure 1) are set in the holes of master plane, then properly set it in the mechanism.

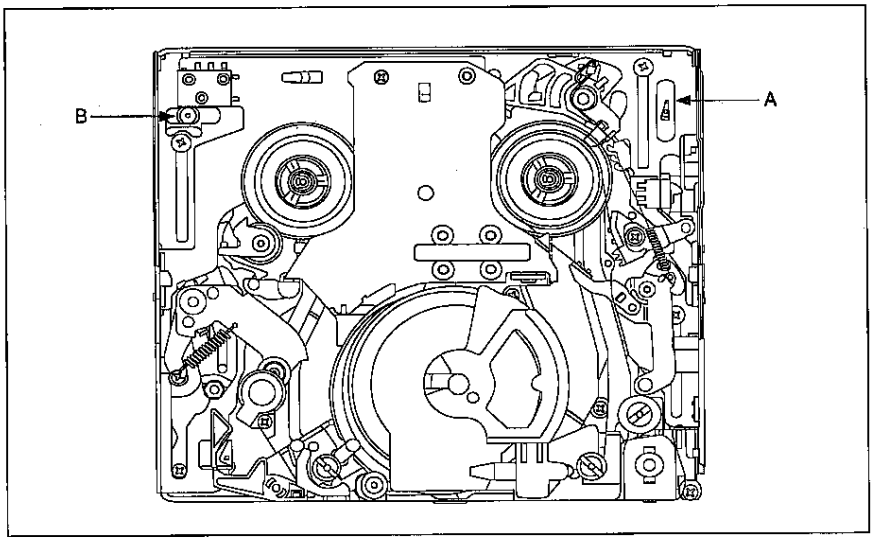


Figure 1

(3) Using the slide callipers or the like, check that the distance from the upper surface of master plane to the reel support surface of the S/Tu reel disk is within the specified range.

Note:
When measuring, do not apply excessive force to the reel support surface of reel disk.

(4) If the measurement is not within the specified range, replace the reel disk ass'y.

(5) Check the items (2) to (4) above in the following two modes.
a) Standby mode
b) Playback (recording) mode

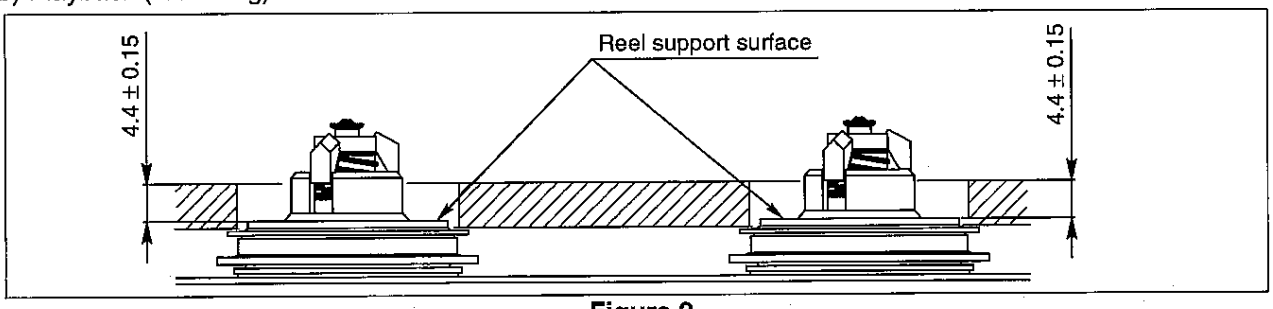
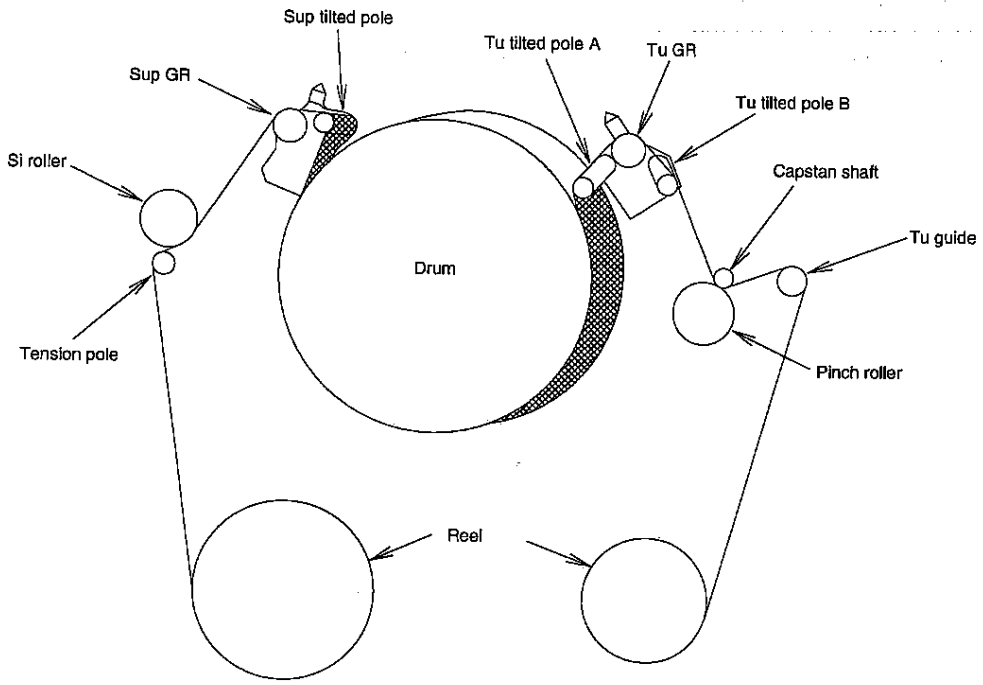


Figure 2

4-4. ADJUSTMENT OF MECHANISM TAPE TRAVEL SYSTEM



Tape travel system (Figure 1)

4-4-1. Preparation for adjustment

(1) Clean the tape running areas (guide poles, rollers, drum, Capstan shaft, Pinch roller) (Figure 1)

(2) Connect the oscilloscope to the following TPs.
RF output ...TL3306
H-SW-P TL405
GND TL3318

(3) Playback the alignment tape (VR2DBOPS).

(4) Ascertain that each guide is free from remarkable curl.

(5) Ascertain that the RF waveform of inlet and outlet sides is flat on the oscilloscope (Figure 2, (a)). Unless the waveform is flat, (Figure 2, (b), (c)), make an adjustment as follows.

4-4-2. Adjusting the Sup GR and Tu GR

(1) Turn the Sup and Tu guide rollers to get the flat waveform at the inlet and outlet sides.

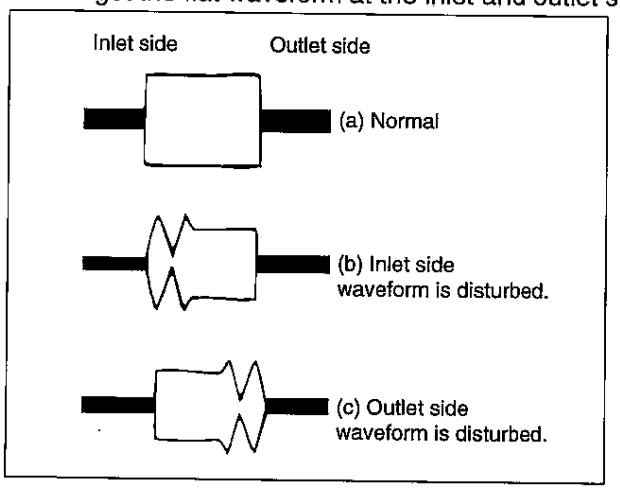


Figure 2

4-4-3. Adjusting the Si roller height

After replacement of Si roller preset and adjust the Si roller height.

(1) Si roller height presetting
Adjust the height from the upper surface ofmechanism chassis to the upper surface of lower flange with the aid of jig. Then lower it by 90° (clockwise).

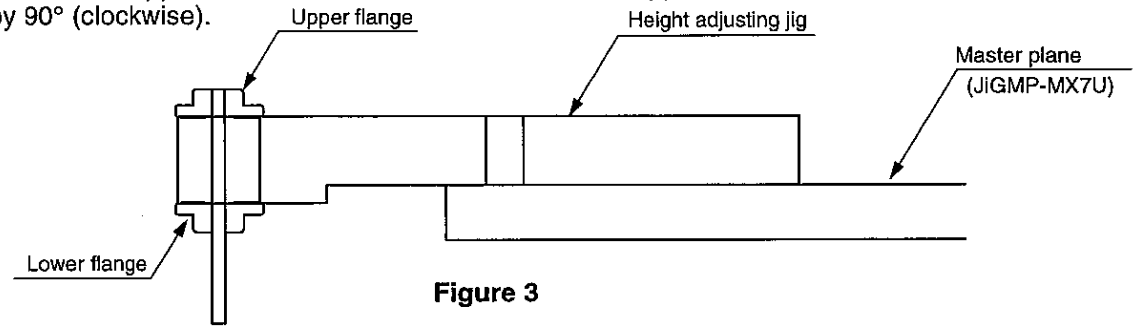


Figure 3

(2) Adjusting the Si roller

1 Playback the tape to set the V/SR mode.

2 Ascertain that the tape is not folded on the lower flange (2) of Si roller (1). (Figure 4)
If tape folding is found, turn the upper flange (3) of Si roller (1) with the driver (clockwise) to eliminate the folding.

3 Playback the alignment tape (VR2DBOPS).

4 Adjust the Sup GR and Tu GR by the procedure described in section 4-2 above.

5 After V/S F,R perform playback so as to ascertain that the waveform rises horizontally within 2 seconds.

6 Unless the normal waveform is obtained (Figure 5), turn counterclockwise the upper flange (3) of Si roller (1), and repeat the step (5) above. Repeat the steps (5) and (6) until the normal waveform is obtained. At this time ascertain that the inlet travel does not change in the normal playback state. If any change is found, adjust the Sup GR, and redo the step (5).

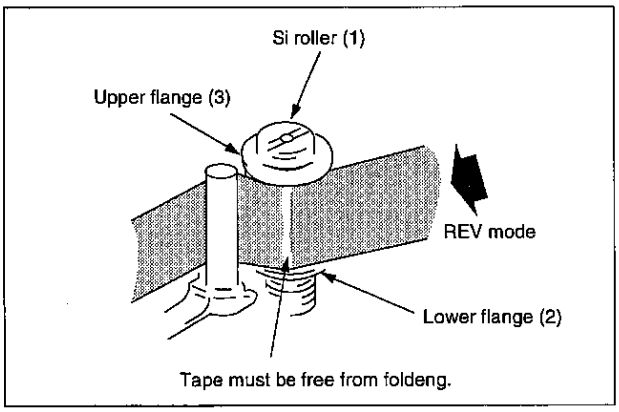


Figure 4

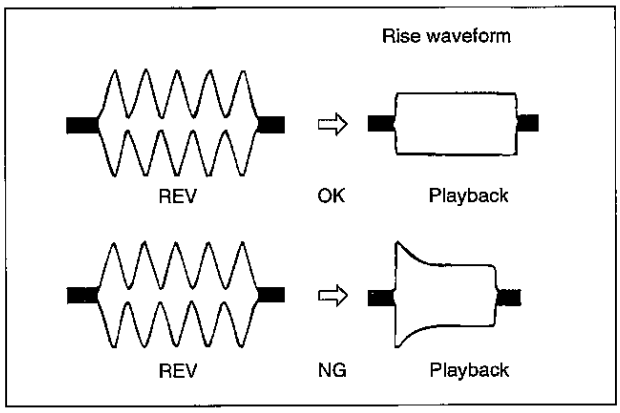


Figure 5

4-4-4. Adjusting the Tu guide

After replacement of Tu guide preset and adjust the height.

(1) Tu guide height presetting

Adjust the height from the upper surface of mechanism chassis to the upper surface of lower flange with the aid of jig.

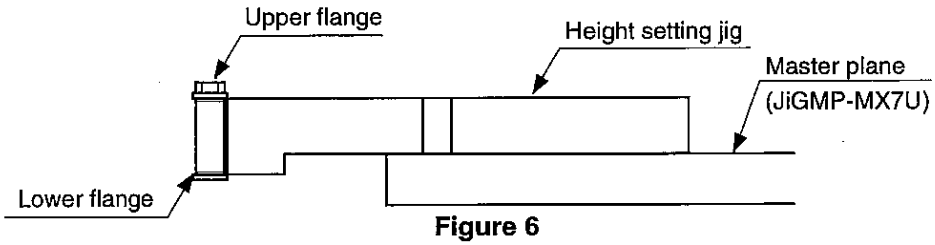


Figure 6

4-5. Mechanism assembling and parts replacement (disassembling and assembling)

Below is given an explanation of assembling of mechanism and its parts replacement.

The removal of cabinet and Circuit Board is explained in the relevant service manual.

Notes

1 After removal of cut washers be sure to replace them with new ones.

2 Do not place the mechanism upside down on the table. Otherwise, the mechanism part may be deformed or damaged, resulting in malfunction.

3 When assembling, take care so that screw, washer or other foreign substance do not enter. Otherwise mechanism malfunction may occur.

4 Be sure to use the specified cleaning liquid, oil, grease and screw lock as listed below. Otherwise mechanism malfunction may occur.

Oils: 1) Cosumo Oil Co., Ltd.
COSMOHYDRO HV100

Greases: Dow Coaning
MORYCOAT YM-103/X5-6020

Screw lock: THREE BOND
1401B

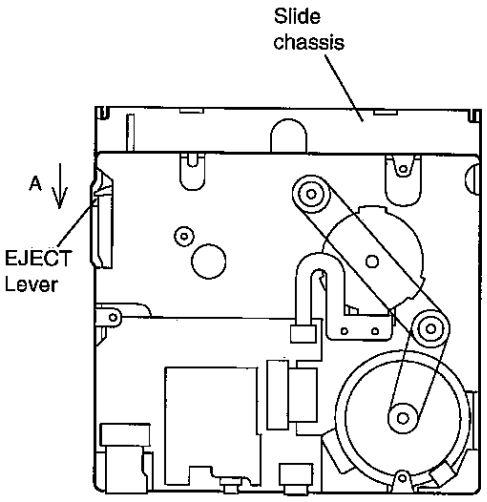
Cleaning liquid: Industrial-use ethyl alcohol

4-5-1. Mechanism modes

To actuate the mechanism, apply DC3 to 4V to the L motor ((2) in Figure 4). At this time the L motor connector must have been disconnected in advance.
Below is given an explanation of the mechanism mode necessary for mechanism check, adjustment and replacement.

(1). EJ (Eject) mode (See Figure 1)

In this mode, it is mechanically positioned to eject the cassette. It is the position where the EJECT lever is moved the farthest in the direction A in the S/B mode. (In this mode, the cassette compartment assembly can not be locked.)

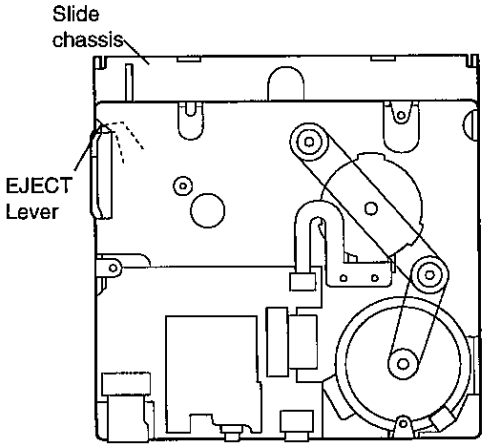


EJ mode

Figure 1

(2). S/B (Standby) mode (See Figure 2)

When the cassette is loaded, the mechanism is set to the S/B mode. In this mode the slide chassis is most far from the drum. In this mode the Eject lever is in position shown in Figure 2 (in position where the cassette control ass'y can be locked).

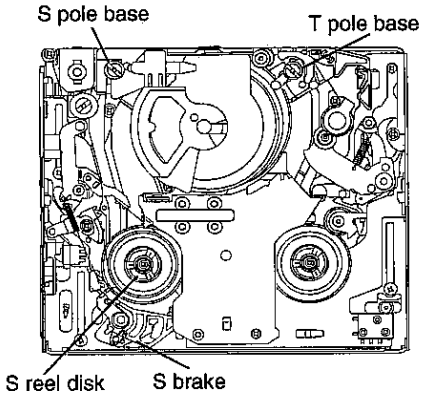


S/B mode

Figure 2

(3). STOP mode (See Figure 3)

In the STOP mode the S.T pole base is depressed in the STOP position (or Rec Lock position in CAMERA mode), and the S brake is in contact with the S reel disk.

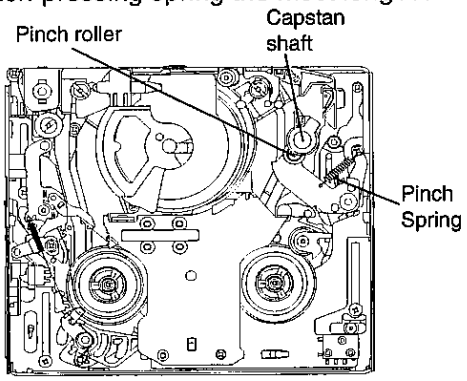


STOP mode

Figure 3

(4). PB mode (See Figure 4)

In this mode, it is positioned for the replay, record and so on. It is the mechanical position where the pinch roller is pressed against the capstan shaft to make the pinch-pressing spring the most longest.



PB mode

Figure 4

4-5-2. Cassette control ass'y

<Disassembling>

(1) Set the unit to the EJECT mode, and let the housing stand upright. Or set the unit to the STANDBY mode, press the lock lever in the arrow direction, and let the housing stand upright. (See Fig.5: in the direction ⓐ or ⓑ) (When pushing in the direction ⓐ, slightly lift the housing by hand to release the lock lever.)
(2) Remove the four screws ② and take out the down guide ③.
(3) Slide the two link support shafts ⓒ and the two roller shafts ⓓ to the round openings ⓖ on their respective slide chassis slits (two at ⓔ and two at ⓕ).
(4) Deflect the roller shafts ⓓ a little inward to get them out of the round openings ⓖ on the slide chassis. (Be careful not to deform the inner links.)

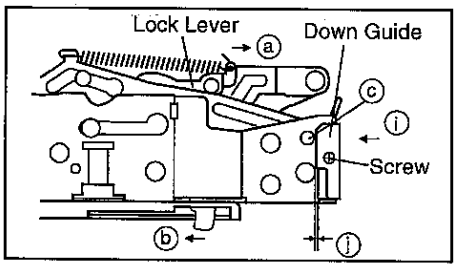
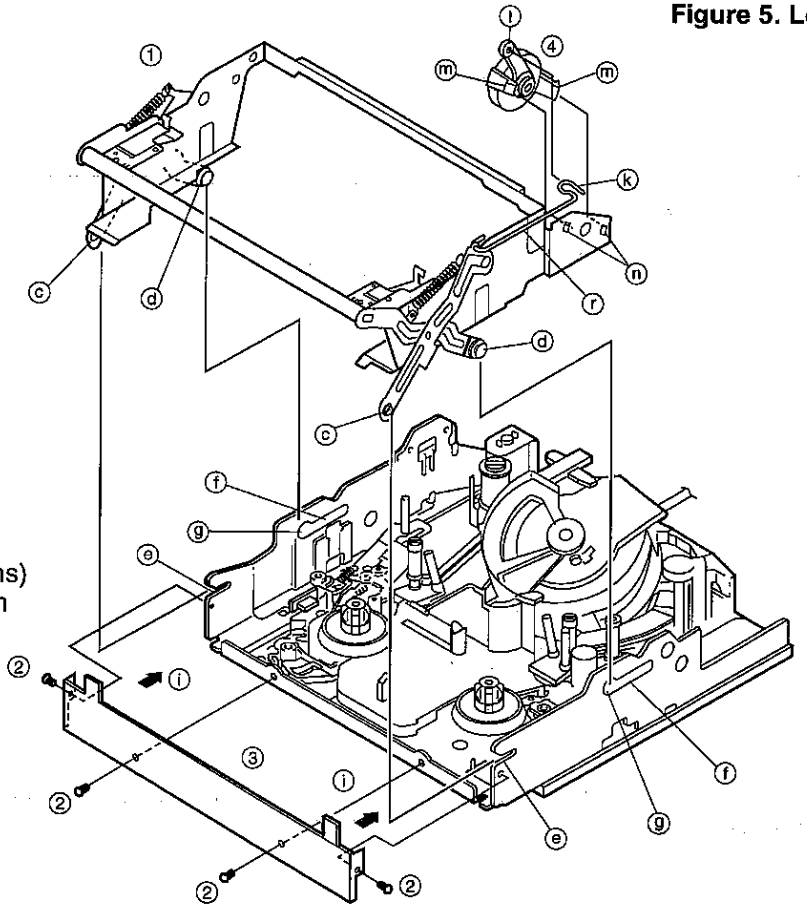


Figure 5. Lock lever section



Screw tightening torque (4 locations) 0.069±0.007 N·m (0.7±0.07kg·cm)

Figure 6.

<Reassembling>

(1) Set the unit to the STANDBY mode.
(2) Deflect the roller shafts ⓓ a little inward, and fit them into the round openings ⓖ on the slide chassis. (Be careful not to deform the inner links.)
(3) Align the flanges of roller shafts ⓓ with the slide chassis slits ⓕ. While sliding the flanges, fit the support shafts ⓒ in the slide chassis slits ⓔ, and slide them until they reach the slits.
(4) Attach the down guide. (While pressing the guide in the direction ⓘ, tighten the screws until the gap ⓙ between the down guide ③ and the support shafts ⓒ becomes zero.)
Tightening torque: 70±7 mN·m (0.7±0.07 kg·cm)

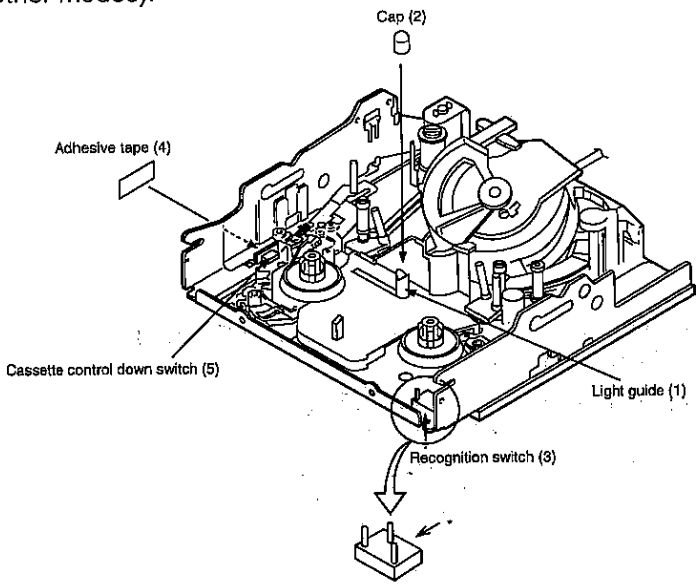
4-5-3. Actuating the mechanism with the cassette control ass'y removed

(1) Turn on the power supply with the cabinet and camera unit removed, referring to the Service Manual (so as to actuate the mechanism).

(2) Put the cap (2) on the light guide (1).

(3) Press the cassette control down switch (5) through the adhesive tape (4) in the arrow direction so as to turn it on. At this time take care to avoid contact with the cassette. Keep the switch pressed (if the switch is turned off, unloading occurs).

Note: To set the Rec mode, press the pin (marked with the asterisk *) of recognition switch (3) (this operation is not necessary in other modes).



4-5-4. Drum and Drum base

Removal

* To replace the upper drum, be sure to put on gloves. Due care is required so that the drum is not damaged.

(1) Drum base

Remove the 3 mounting screws as shown in Figure 1, and remove the drum base.

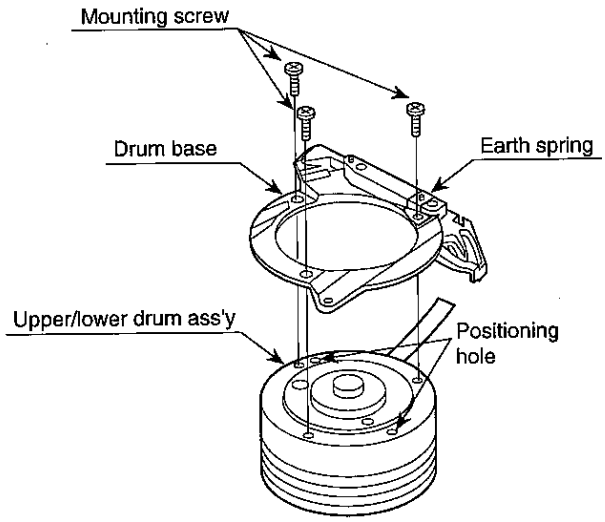


Figure 1

(2) Drum motor stator

Remove the stator mounting screw with the hexagonal wrench as shown in Figure 2, remove the motor stator.

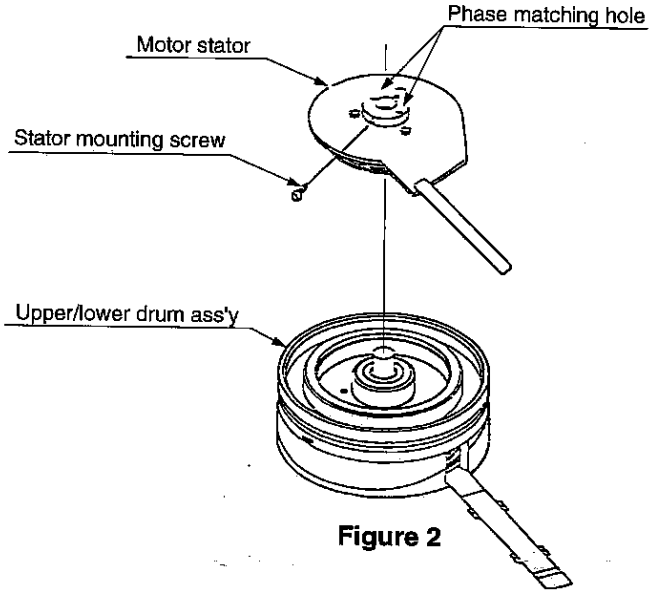


Figure 2

(3) Upper drum ass'y

Remove the upper drum ass'y from the lower drum ass'y as shown in Figure 3.
At this time take care so as not to lose the gap shim.

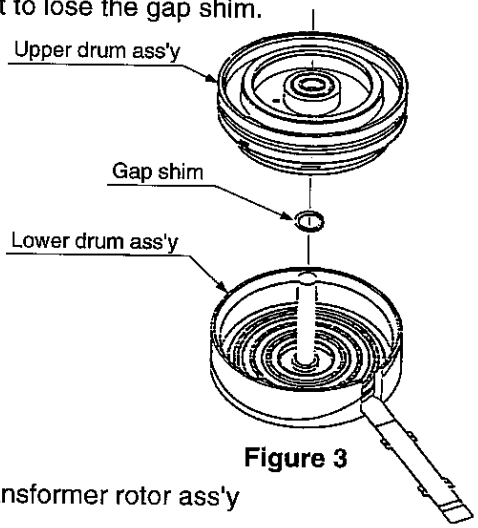


Figure 3

(4) Motor rotor ass'y and rotary transformer rotor ass'y

Remove the 2 rotor mounting screws as shown in Figure 4, and remove the motor rotor and the rotary transformer ass'y.

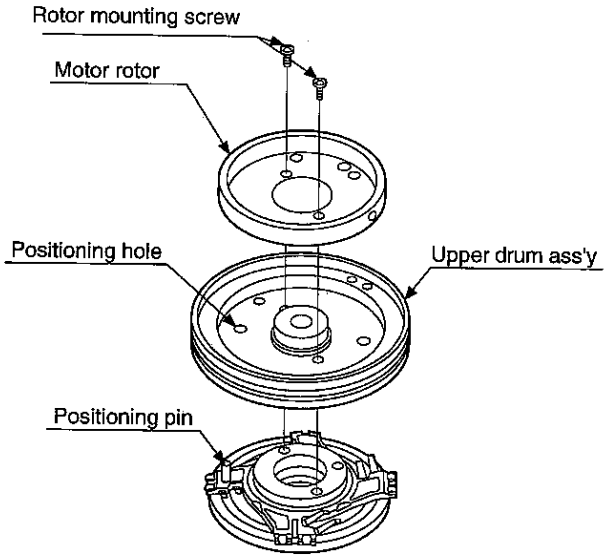


Figure 4

(5) Balancer

Remove the balancer mounting screw as shown in Figure 5, and remove the balancer.

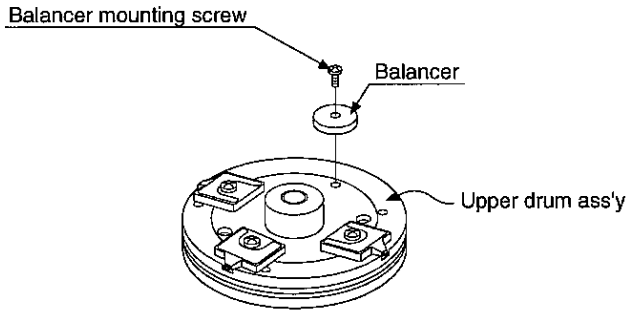


Figure 5

(6) Lower drum ass'y

Remove the FPC mounting screw from the lower drum ass'y as shown in Figure 6.

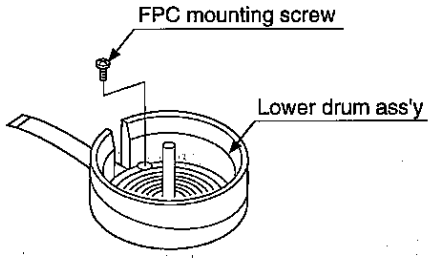


Figure 6

Installation

Install the upper drum in the reverse order of removal.

(1) Balancer

Mount the balancer to the upper drum ass'y with the balancer mounting screw. The screw tightening torque must be 0.1N·m (tighting torque 1kg·cm). (Figure 5)

(2) Motor rotor, rotary transformer rotor ass'y

Clean the contact surfaces of rotor ass'y holder and upper drum ass'y, and ascertain that there are no contamination and flaws.
Next, adjust the phase so that the positioning pin of rotor ass'y is inserted into the positioning hole of upper drum, and tight fit the rotor ass'y to the lower surface of upper drum ass'y (Figure 7).

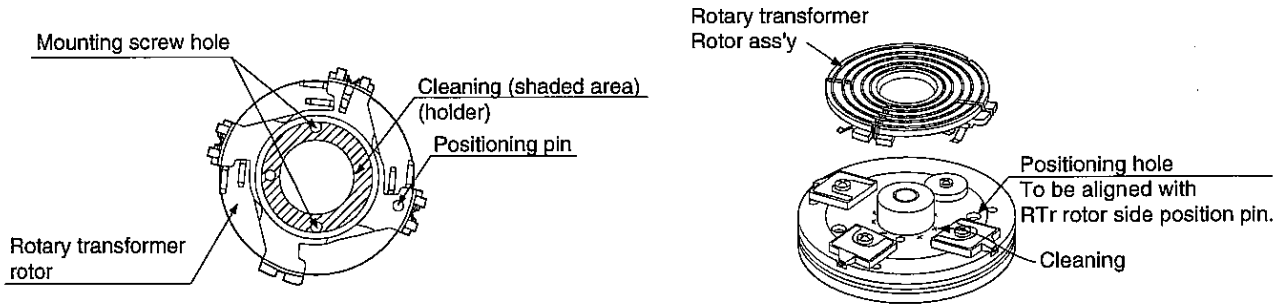


Figure 7

In this state put the motor rotor on the upper surface of upper drum ass'y, and tighten the mounting screw. At this time make sure that the head screw in the three places is visible through the motor rotor hole (Figure 8). The screw tightening torque must be 0.1N·m (1 kg·cm).

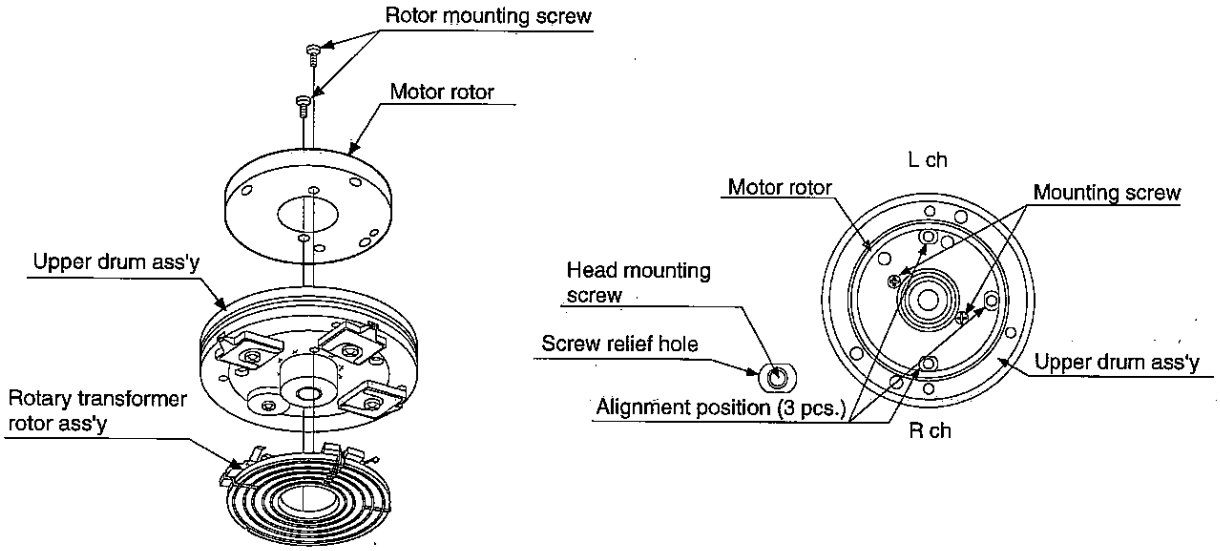


Figure 8

(3) Lower drum ass'y

Tighten the FPC mounting screw to the lower drum ass'y. The screw tightening torque must be 0.08N·m (tighting torque 0.8kg·cm). (Figure 6)

(4) Upper drum ass'y

After fitting the gap shim which was removed when the upper drum ass'y was dismantled to the shaft of lower drum ass'y, fit the upper drum ass'y. (Figure 3)
At this time slightly turn the upper drum ass'y by hand to ascertain that RTr does not scrape. If scrape is found, replace the gap shim with the gap shim packaged together with the replacement upper drum ass'y.

(5) Drum motor stator

Fit the motor stator to the shaft. Then, apply the preliminary pressure 0.07N·m (0.7kg) to the motor stator, tighten the stator mounting screw. The tightening torque must be 0.15N·m (1.5kg·cm).
Install the stator so that the chassis line is nearly parallel with the motor stator straight section when it is installed on the chassis. (Figure 9)

(6) Drum base

Align the positioning pin, and tighten the screws (3 pcs.).

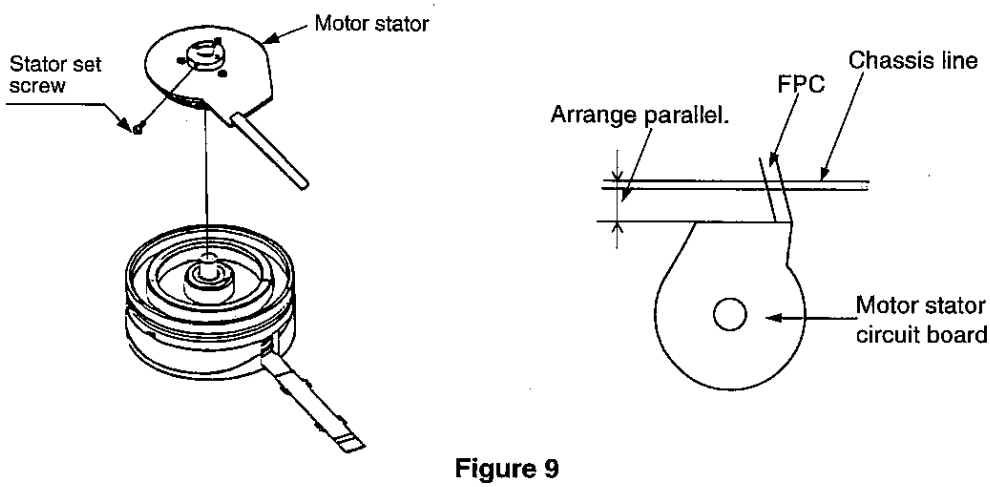


Figure 9

(7) Drum ass'y

Install the drum ass'y on the main chassis, and tighten the screws (3 pcs.).

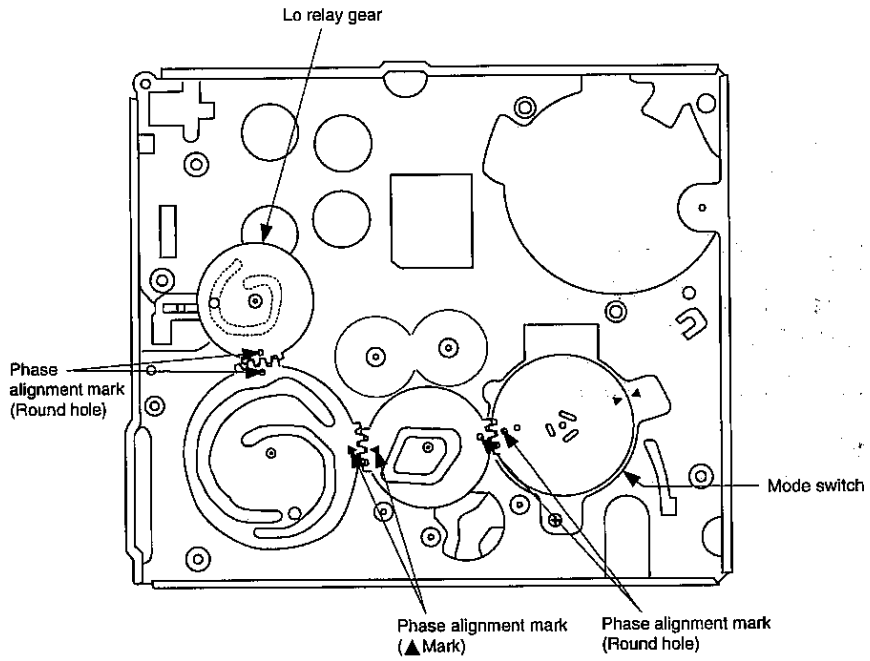
(8) Tape guide

Align the positioning pin, and tighten the screw (one pc.).

4-5-5. Phase matching

The phase of the following parts must be matched as shown in the figure below.
(Ascertain that the ▲ marks and round holes align.)

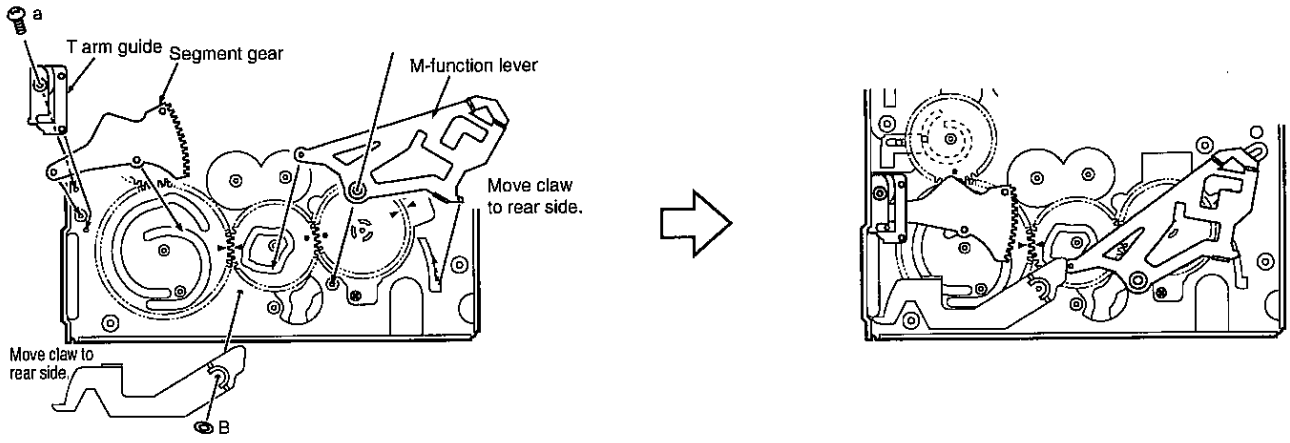
(1) Lo relay gear (2) Main cam (3) Sub-cam (4) Mode switch



4-6. MECHANISM ASSEMBLING METHOD

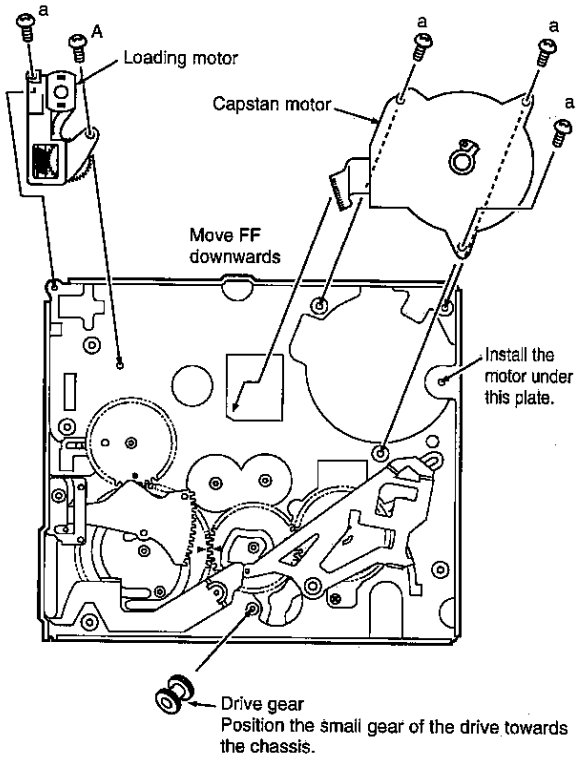
(1) Adjust the phase of each part.
(2) Install screws and washers.
(3) Install the segment gear, T arm guide and the M-function lever. Install the eject lever.

	Item	Tightening torque	Quantity
a	S Tight M1.4 x 3	70mN·m (0.7kgf·cm)	1
B	ø0.8-ø3.0-t0.2		1

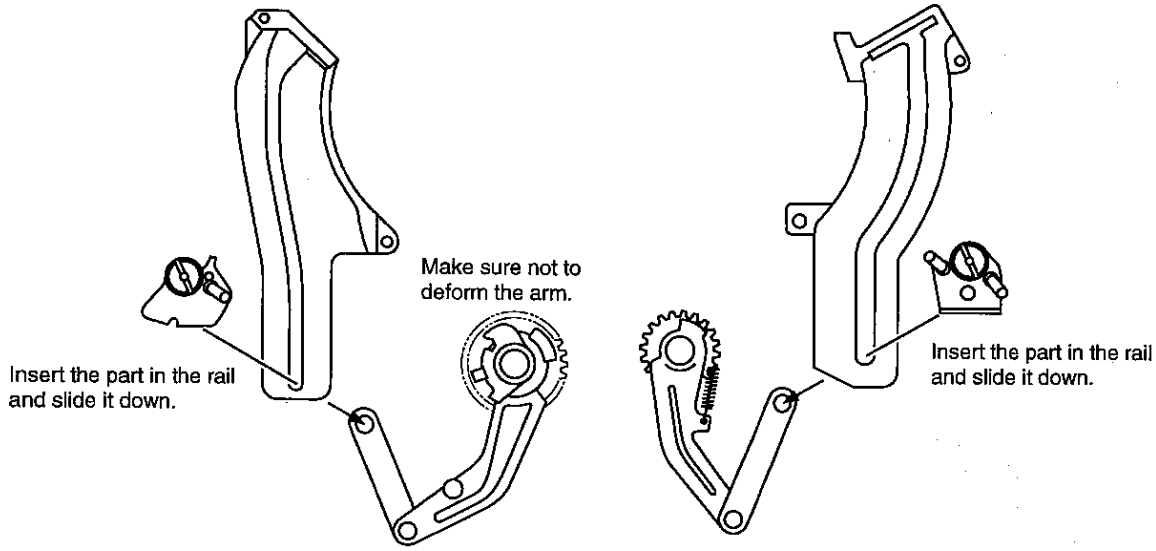


(4) Install the loading block assembly and the capstan motor.
(5) Install the drive gear. At this time, pay attention to the direction of gear. (The small gear must be located in the chassis side.)

	Item	Tightening torque	Quantity
A	S Tight M1.4 x 2.5	70mN·m	1
a	S Tight M1.4 x 3	70mN·m	4

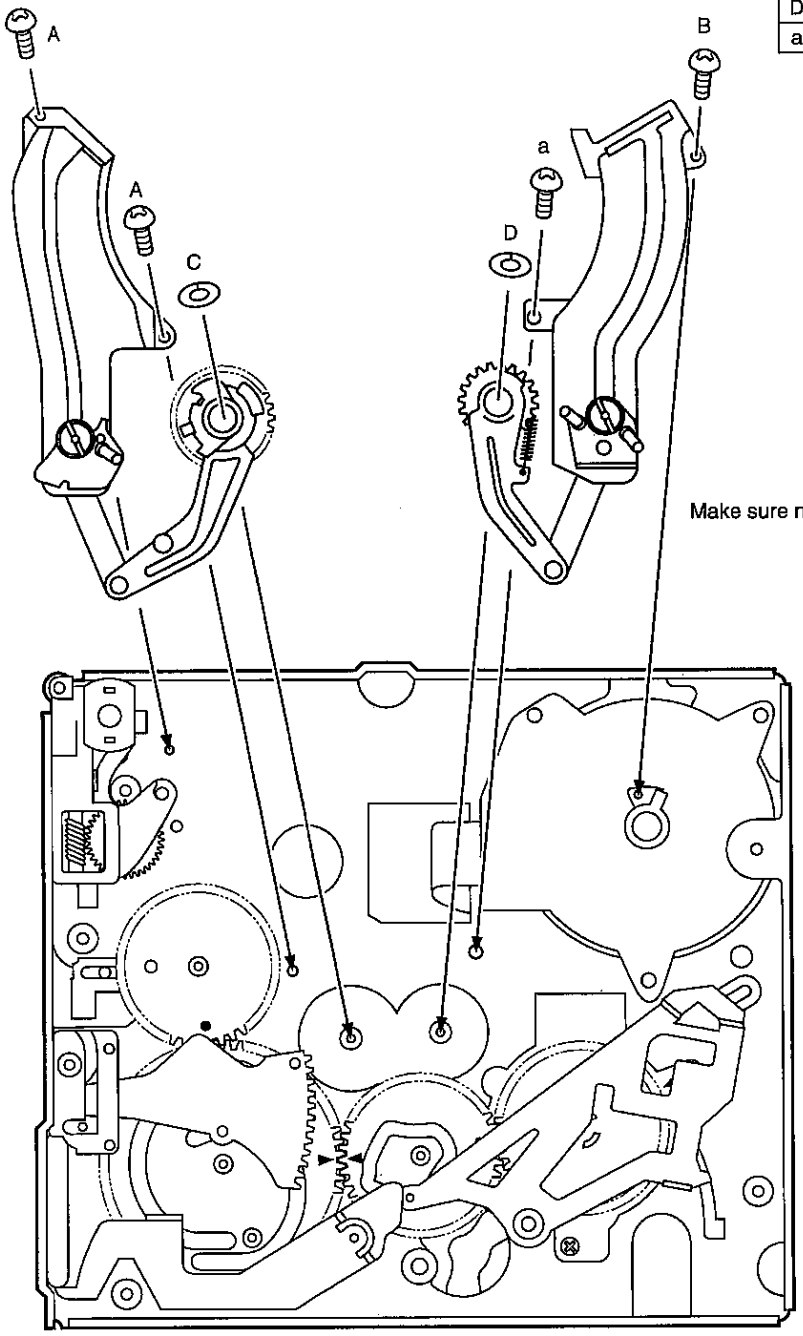


(6) Install the guide rail assembly.



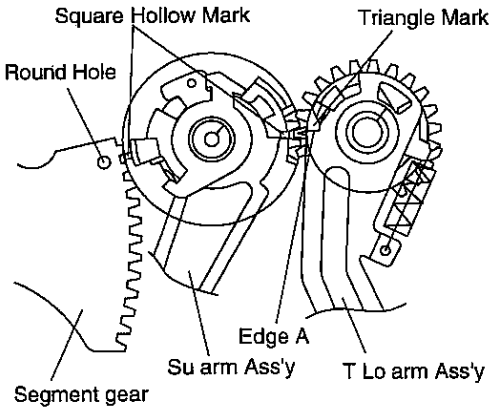
(7) Install the guide rail assembly taking care to position it correctly.

	Item	Tightening torque	Quantity
A	S Tight M1.4 x 2.5	70mN·m	2
B	S Tight M1.4 x 4	40mN·m	1
C	ø0.8-ø3.0-t0.2		1
D	ø2.1-ø5.0-t0.25		1
a	S Tight M1.4 x 3	70mN·m	1



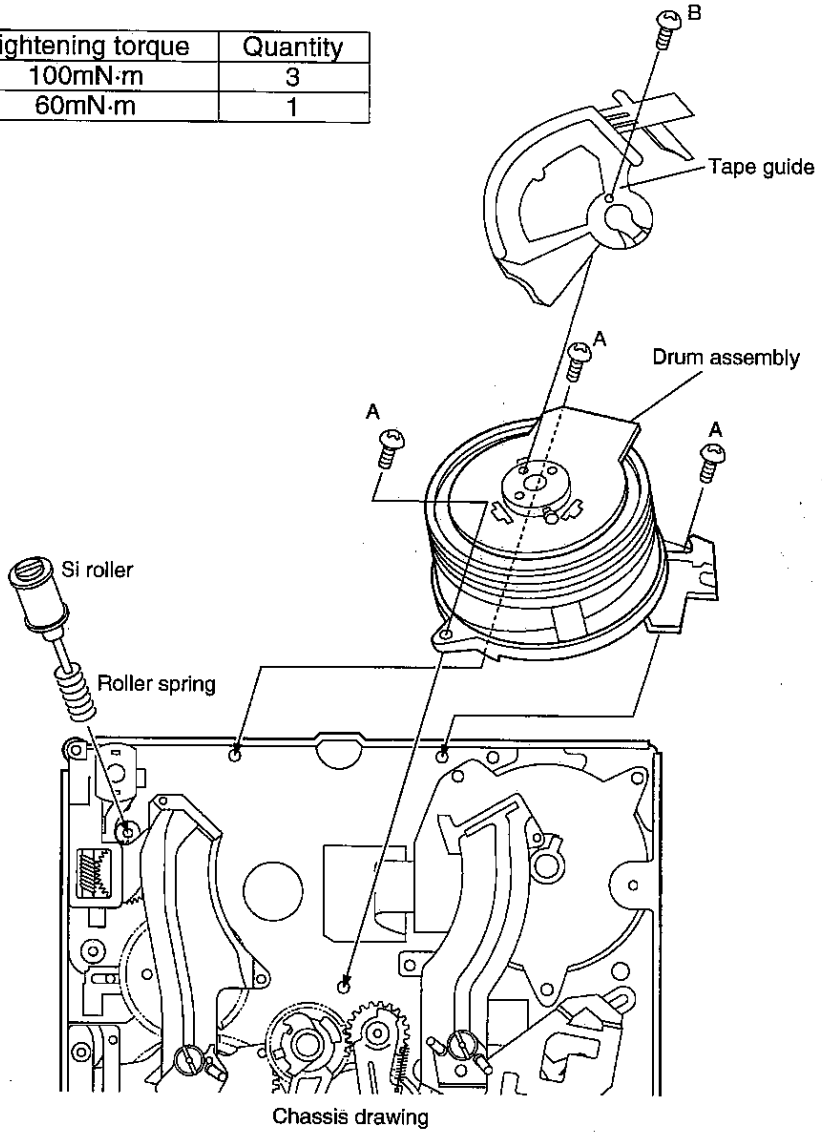
Make sure not deform the arm.

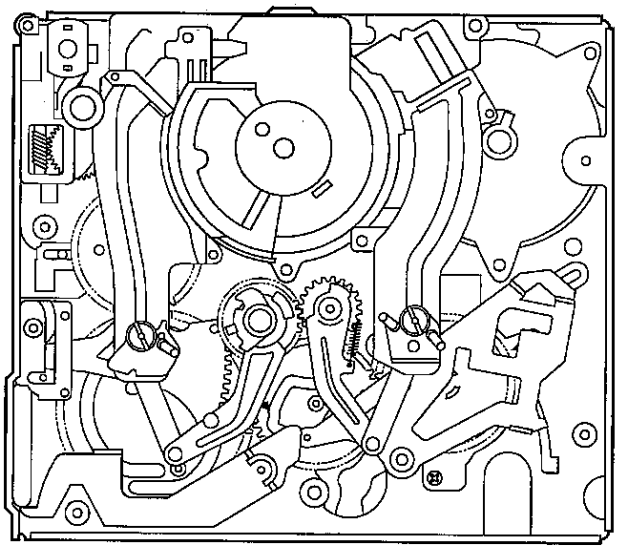
Align the marks on the parts.



(8) Install the drum assembly in the chassis.
(9) Install the tape guide in the drum assembly.
(10) Install the Si roller.

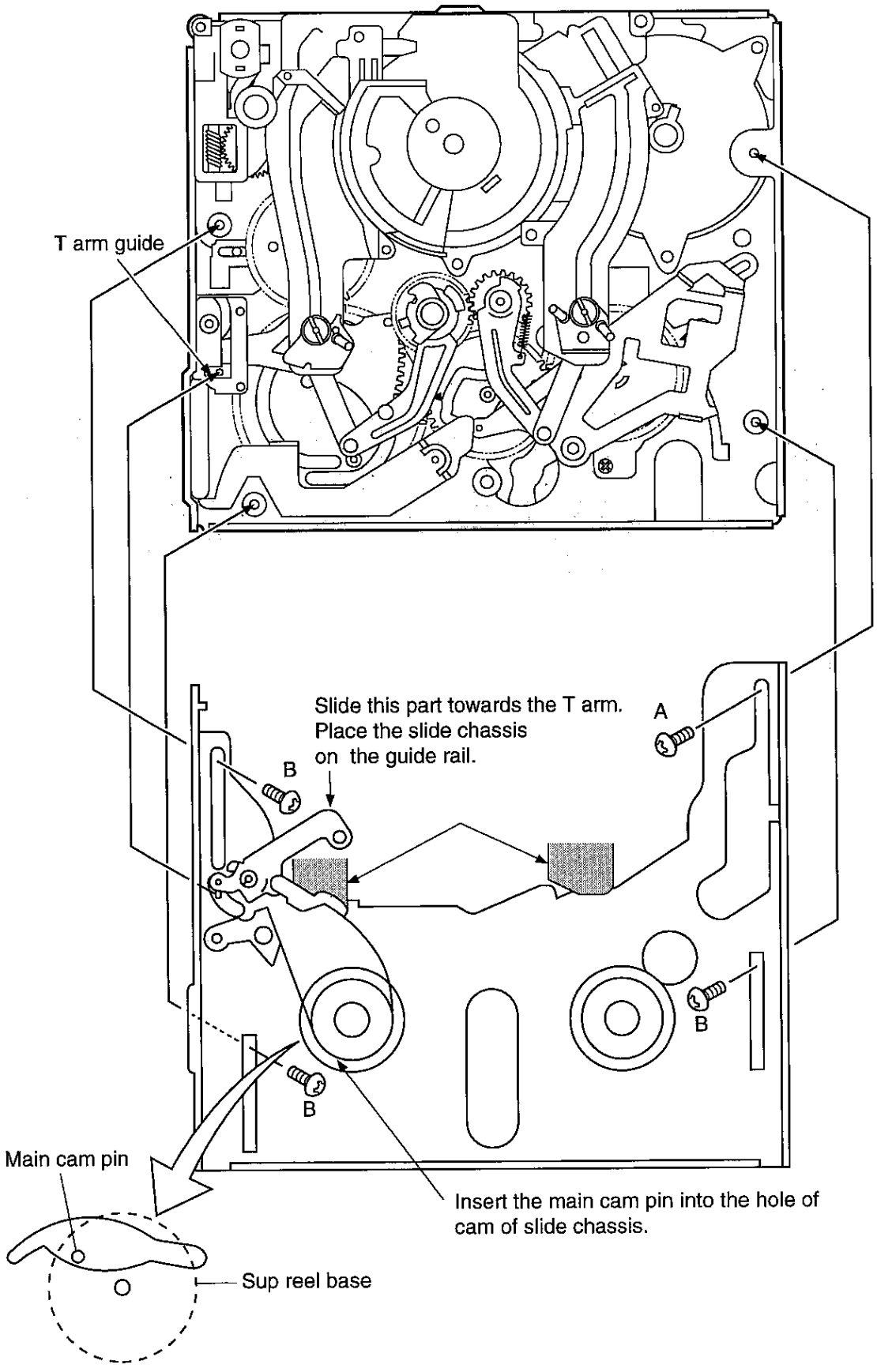
	Item	Tightening torque	Quantity
A	S tight M1.7 x L5.3	100mN·m	3
B	S tight M1.7 x L2.5	60mN·m	1





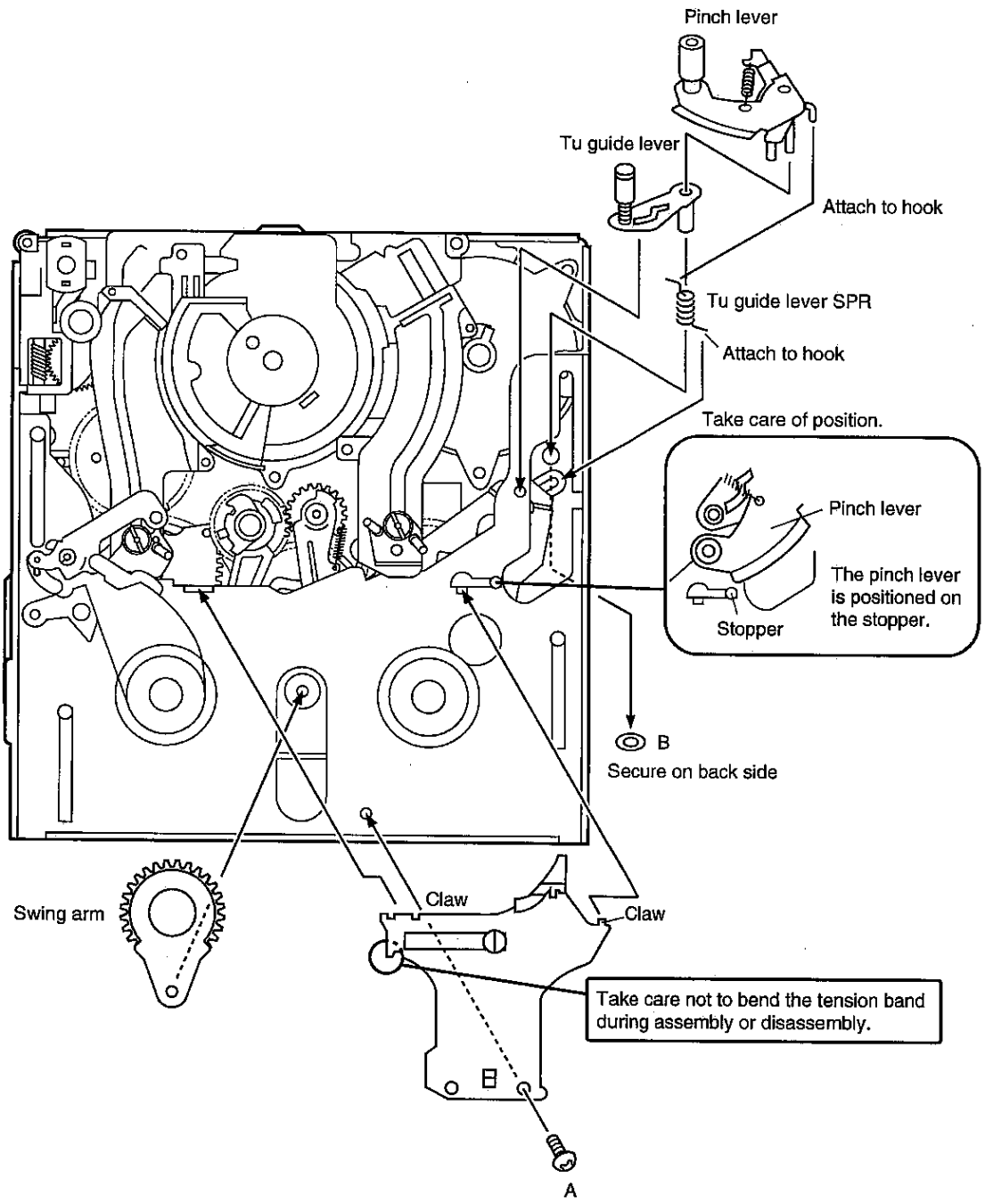
(11) Install the slide chassis.

	Item	Tightening torque	Quantity
A	M1.4 x 1.5 ø4.0	40mN·m	1
B	M1.4 x 1.5 ø3.5	40mN·m	3



(12) Install in the following order: T guide lever spring, T guide lever, pinch lever.
(13) Install the swing arm.
(14) Install the right guide holder.

	Item	Tightening torque	Quantity
A	S tight M1.4 x 2.5	70mN·m	1
B	CW ø0.8-ø3.0-t0.2	70mN·m	1



5. ADJUSTMENT OF VCR

5-1. ADJUSTMENT OF VCR SECTION

5-1-1. Before starting the electric circuit adjustment

- Electric circuit adjustment becomes necessary, in most cases, when any of the wear mechanical parts or the video head has been replaced. Before starting the electric circuit adjustment, be sure to check that the mechanical parts work well (i.e., the mechanical parts have all been perfectly adjusted). In case a trouble or troubles are found in the electric circuitry, be sure to pinpoint the cause(s) by using the measuring instruments described below. After locating the trouble spot(s), then proceed to repair, replacement or adjustment. Do not change the positions of the controls when adequate measuring instruments are not available.
- In order to implement a higher-density, smaller machine, most of the electric circuit parts used on the Circuit Boards are of small-sized, surface-mounted type. For replacing part(s) as after-sales service, work with a soldering iron as speedily as possible. The heat resistance of the surface-mounted components is poor, when compared with the larger-sized discrete parts used for television sets and stationary decks, owning to their small sizes. Therefore, exercise due care to avoid long-time exposure of the pins of these parts to the heat of the soldering iron which may possibly damage them. Such care should be exercised especially for chip-layer capacitor replacement. It is advisable to use a temperature-controlled ceramic soldering iron (temperature at the tip: 250°C, contacting time: less than 5 seconds).

< Adjusting the video/LCD section >

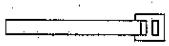
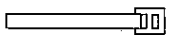
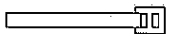
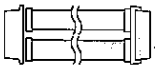
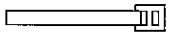
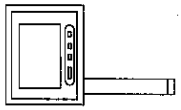
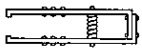
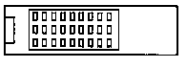
- Measuring instruments:

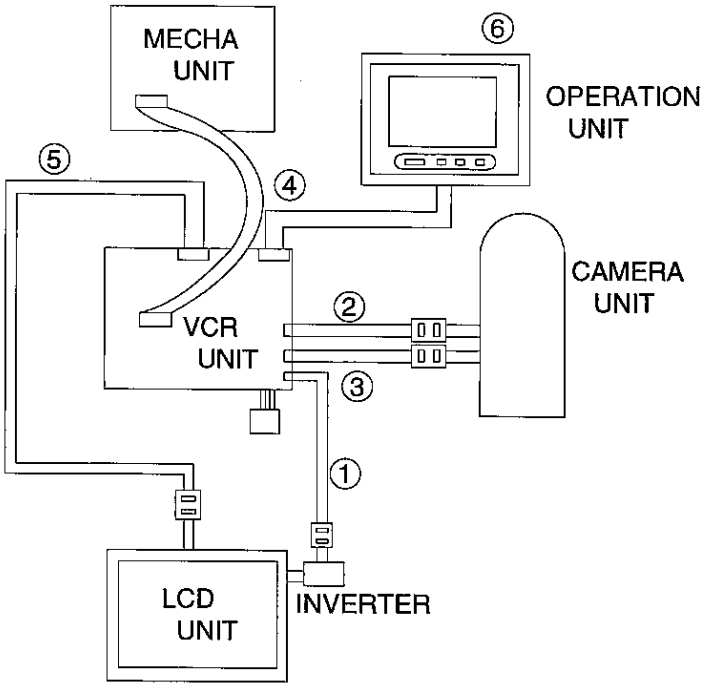
*Color monitor TV set	*Oscilloscope	*Vector scope
*Digital voltmeter	*Frequency counter	
*DC power supply	*Signal generator (NTSC pattern generator LCG-401/401YC: Leader-made)	
*Audio generator (CR oscillator)	*Video recording tape	
*Alignment tape (JiGWR5-5CSP)	(For Y/C, audio and servo adjustments)	
*AC adapter	*DC cable (AC adapter accessory)	
*AV output cable (accessory)	*Video extension cables	

5-1-2. Servicing the VCR section Adjustment

5-1-2-1. Typical connections

Extension Cable etc.

NO.	NAME	PART NO.	Code	CONFIGURATION	REMARKS
1	Extension Cable Inverter~VCR (7pin)	QCNW-1265TAZZ	AX		
2	Extension Cable Camera~VCR (17pin)	QCNW-1380TAZZ	BD		
3	Extension Cable Camera~VCR (15pin)	QCNW-1311TAZZ	BA		
4	Extension Cable MECHA~VCR (70pin)	QCNW-1534TAZZ	BS		
5	Extension Cable LCD~VCR (24pin)	QCNW-1382TAZZ	BD		
6	Operation Unit	QSW-Z0286TAZZ	AR		
7	Connector fitting and withdrawing extractor				insulating sleeve
8	Connector fitting and withdrawing tweezers	9EQPiNSET06GE	BR		
9	Service remote control	RRMCG0033TASA	BT		



• Types of test modes

TEST No.	Title	Contents	Sensor on/off
1	Sensors off	All sensors but the cassette controller switch, dew sensor and battery sensor stay off.	
3	Automatic battery sensor adjustment	Battery sensor's input voltage put in memory.	
4	Battery adjustment error display	Battery sensor's adjustment errors are displayed at the right of the "past errors" area.	All sensors on All but sensors on
5	PASS mode	Track shift mode (1/4 shift)	All sensors on
6	Camera adjustment mode	Camera adjustment mode	[VCR interrupted]
7	VCR adjustment mode	VCR adjustment mode	
8	Automatic switching point adjustment (STOP ADJ)	Play standard tape and call this mode. Switching point is automatically adjusted.	

① When the battery adjustment mode is selected from the camera adjustment mode with a cassette with the erase protection tab, the VCR is automatically put in the REC mode.

• Below discussed are these seven test modes.

① [TEST No. 1] Sensors off mode
All the sensors, except for the cassette controller switch, dew sensor and battery sensor, stay off. This enables to bring the VCR in the loading mode without tape. The VCR/camera performance can now be checked with no tape inside.

② [TEST No. 3] Automatic battery alarm adjustment
Used to automatically adjust the voltage level which makes the "battery" appear on the LCD display.

③ [TEST No. 4] Battery alarm check/error display
• The difference between the preset battery alarm voltage and the current supply voltage is displayed as follows.
• A past error is displayed at the right of the current battery alarm error.

④ [TEST No. 5] PASS mode
Used to adjust the tape travelling condition. The tracking is shifted by 1/4 from the center to make the tape running-related RF envelope fluctuations easier to observe.

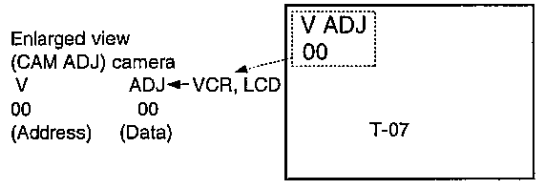
⑤ [TEST No. 6] Camera adjustment mode
Used to adjust the camera section. (For details, see Servicing the Camera Section.)

⑥ [TEST No. 7] VCR adjustment mode
Used to adjust the VCR section. (For details, see Servicing the VCR Section.)

⑦ [TEST No. 8] Automatic switching point adjustment
Used to automatically adjust the playback switching point. (For details, see Automatic Adjustment of the Playback Switching Point.)

5-1-2-2. Setting up the VCR section adjustment mode (camera section adjustment)

• Select adjustment items by using addresses. Rewrite the adjustment data to change the settings. Below shown the adjustment procedures and on-screen display.



	Procedural steps	Display (: flashing)
①	Turn up or down the flashing hexadecimal number with the FF or REW key to select the address of a desired adjustment item. (Initial address: 00H) Note: The addresses change as follows. 7E — 7F — 00 — 01 — 02	V ADJ
②	Press the PB key to read the data of the selected address.	V ADJ 2C A3
③	Turn up or down the data setting with the FF or REW key. The data display starts flashing.	V ADJ 2C
④	Press the PB key again to write the data setting into the selected address.	V ADJ 2C 72
⑤	Press the STOP key in the above step ② or ④, and the screen returns back to the step ①.	V ADJ

When the FF or REW key is held down for 0.3 second or longer, the address selection is repeated in cycles of 100 msec. The data setting changes by ± 4 by holding the key down for 2 seconds or longer.

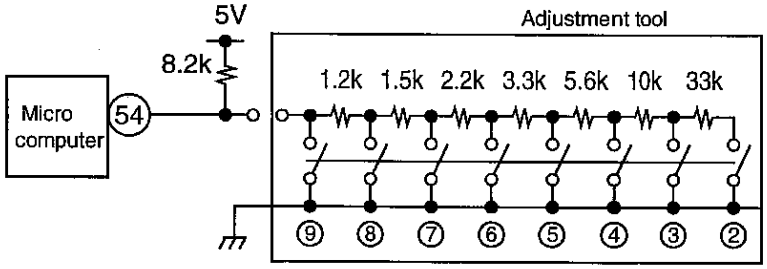
5-1-2-3. Battery shut-off voltage adjusting method

1) Supply power to the main unit, using the variable-voltage DC power supply (range of 2.5V to 5V).
2) Set the CAM/OFF/VCR SW to CAM to switch to the camera mode.
3) Load a recordable tape and set the main unit to CAM REC. PAUSE.
4) Set the main unit to TEST mode No. 3, and start recording.
5) Measure voltage between TL901(+) and TL903(GND), and adjust the supply voltage to 3.0V.
6) The adjustment is complete if "BATTERY" is displayed on the monitor screen for a second when the PLAY key of operation unit is pressed.
7) The adjustment is regarded as proper if the auto shut-off is actuated after the warning is displayed when the TEST mode is cancelled.

* In case of automatic adjustment of shut-off voltage, adjustment is impossible if voltage is above 3.0V ± 0.2V. If the adjustment is made at 2.9V or below, the low-voltage operation may become unstable.

• Types of test modes

Any of the eight test modes can be set up by changing the input voltage at pin (54) of IC703. During any test mode, the REC Start/Stop commands are not accepted.



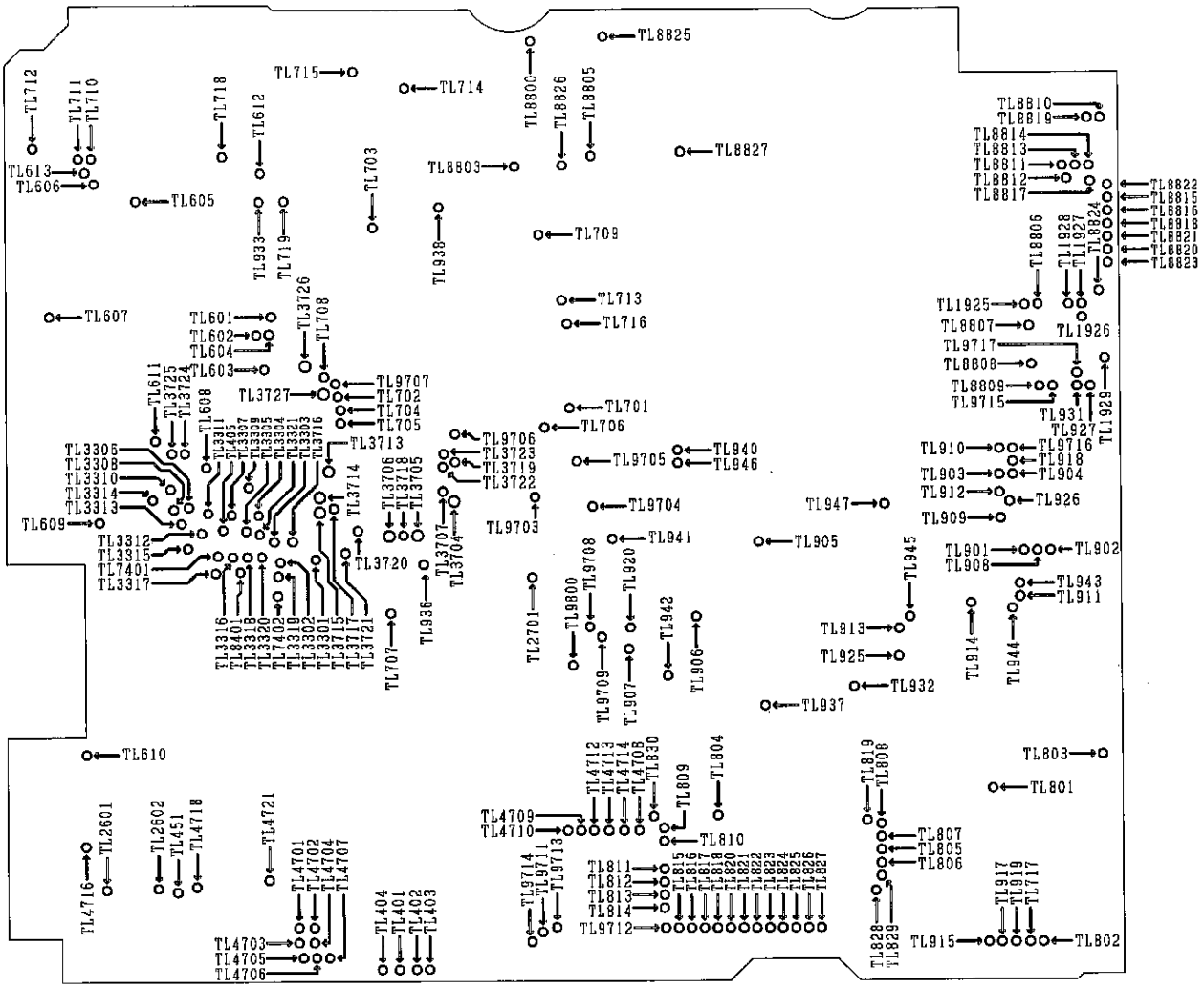
Use the SW2 thru SW9 switches on the adjustment tool to select the following test modes.

SW No.	Title	Contents	Sensor on/off
2	Sensors off	All sensors but the cassette controller switch, dew sensor and battery sensor stay off.	
3	Mechanism adjustment mode	① Automatic SP/LP detection prohibited ② Different-mode detection prohibited ③ ATF sampling limited to center	All sensors on
4	Automatic battery sensor adjustment	Battery sensor's input voltage put in memory.	
5	Error display Battery adjustment error display	Past errors appear on the counter display of the viewfinder. Battery sensor's adjustment errors are displayed at the right of the "past errors" area.	All sensors on All but sensors on
6	PASS mode	Track shift mode (1/4 shift)	All sensors on
7	Camera adjustment mode	Camera adjustment mode	[VCR interrupted]
8	VCR adjustment mode	VCR adjustment mode	
9	Automatic switching point adjustment (STOP ADJ)	Play standard tape and call this mode. Switching point is automatically adjusted.	

① When the battery adjustment mode is selected from the camera adjustment mode with a cassette with the erase protection tab, the VCR is automatically put in the REC mode.

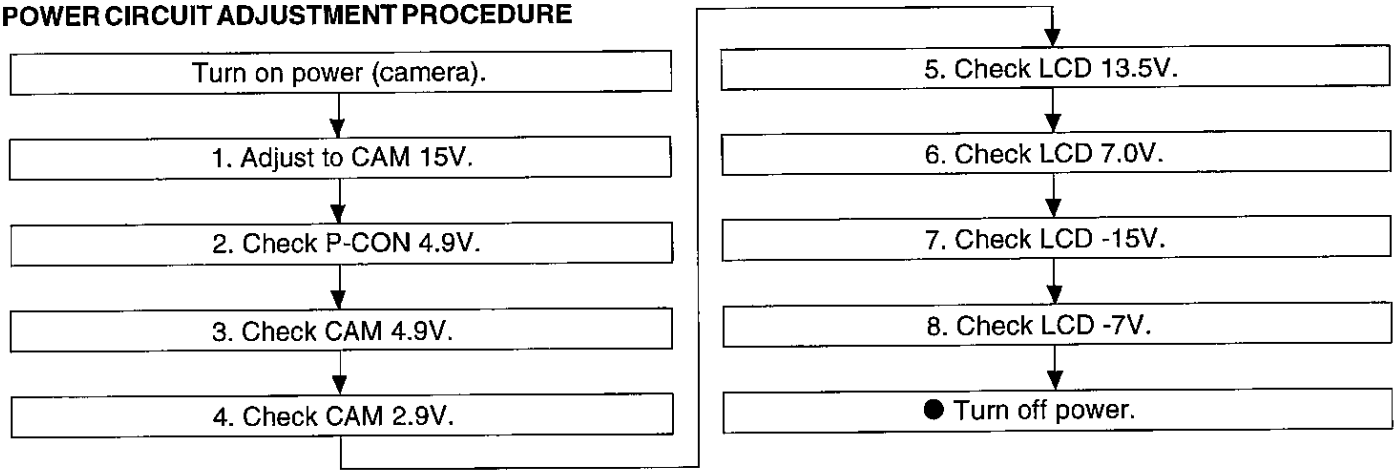
5-1-3. Adjusting the VCR circuit

• Test Points on the Video Circuit Board



5-1-3-1. Adjusting the power circuit

POWER CIRCUIT ADJUSTMENT PROCEDURE


Turn on power (camera).
1. Adjust to CAM 15V.
2. Check P-CON 4.9V.
3. Check CAM 4.9V.
4. Check CAM 2.9V.
5. Check LCD 13.5V.
6. Check LCD 7.0V.
7. Check LCD -15V.
8. Check LCD -7V.
● Turn off power.

POWER CIRCUIT ADJUSTMENT METHOD

● Input 6V from the battery terminal, and set the power switch to the camera side.

1. Adjustment to CAM 15V

1) Make an adjustment so that the digital voltmeter indicates 15.0V ± 0.05V.

Measuring instrument	Digital voltmeter
Measuring terminal	TL910
Adjustment address	20H
Standard	15.0V ± 0.05V

2. Checking of P-CON 4.9V

1) Check that the digital voltmeter indicates 4.9V ± 0.1V.

Measuring instrument	Digital voltmeter
Measuring terminal	TL905
Adjustment address	
Standard	4.9V ± 0.1V

3. Checking of CAM 4.9V

1) Ascertain that the digital voltmeter indicates 4.9V ± 0.1V.

Measuring instrument	Digital voltmeter
Measuring terminal	TL906
Adjustment address	
Standard	4.9V ± 0.1V

4. Checking of CAM 2.9V

1) Ascertain that the digital voltmeter indicates 2.9V± 0.1V.

Measuring instrument	Digital voltmeter
Measuring terminal	TL931
Adjustment address	
Standard	2.9V ± 0.1V

5. Checking of LCD 13.5V

1) Ascertain that the digital voltmeter indicates 13.5V ± 0.2V.

Measuring instrument	Digital voltmeter
Measuring terminal	TL913
Adjustment address	
Standard	13.5V ± 0.2V

6. Checking of LCD 7.0V

1) Ascertain that the digital voltmeter indicates 7.0V ± 0.25V.

Measuring instrument	Digital voltmeter
Measuring terminal	TL914
Adjustment address	
Standard	7.0V ± 0.25V

7. Checking of LCD -15V

1) Ascertain that the digital voltmeter indicates -15.2V ± 1.0V.

Measuring instrument	Digital voltmeter
Measuring terminal	TL909
Adjustment address	
Standard	-15.2V ± 1.0V

8. Checking of LCD -7V

1) Ascertain that the digital voltmeter indicates -7V ± 0.5V.

Measuring instrument	Digital voltmeter
Measuring terminal	TL911
Adjustment address	
Standard	-7V ± 0.5V

● Turn off power supply.

5-1-4. Adjustment of system controller and servo circuit

5-1-4-1. Adjustment of playback switching point

1) Play back the adjustment tape (JiGWR5-5NSP)
2) Press the "CONTINUOUS PUSH" and "TEST MODE SELECTION" of adjustment remote controller to set the test mode.
   At this time the numeral of "TEST01" blinks.)

Measuring instrument	Oscilloscope
Mode	Playback
Adjustment address	30h
Tape	Alignment tape (JiGWR5-5NSP)

3) Using the "FF" and "REW" keys, select "TEST08", and press the playback key to set the SW-P adjustment mode.
4) After a while the adjustment is completed, and operation stops automatically.
   In case of adjustment failure the tape is ejected automatically.

Only in the case when the satisfactory result was not obtained by the adjusting method described above, perform the following adjustment.

1) Connect each signal to the oscilloscope.
   1ch: Video output ... TL801
   2ch: H-SW-P TL405
   GND: GND TL802
2) Play back the alignment tape (JiGWR5-5CSP)
3) Press the "CONTINUOUS PUSH" and "VCR ADJUSTMENT" of adjustment remote controller to set the VCR adjustment mode.
4) Select the address 30h, set the sync slope of oscilloscope to (–), adjust the data with "REW" and "FF" so that the interval between the trigger point and the V sync signal is set to 6H, and fix the data with the "PLAY" button. (See Figure 5.1.1.)
5) Then, set the sync slope to (+), and ascertain that the interval between the trigger point and the V sync signal has been set to 6H. (See Figure 5.2.2.)
6) Keep the STOP key pressed for about 3 seconds to exit from the adjustment mode.

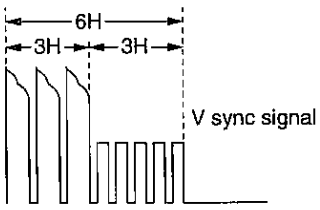


Figure 5.1.1

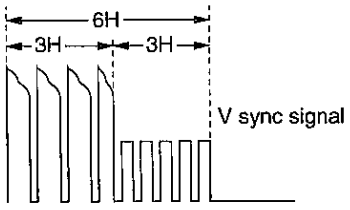


Figure 5.2.2

5-1-5. Y/C circuit adjustment method

Input signal conditions

Video signals generated by a pattern generator are used to make electric adjustments in a Y/C circuit. Thus this signal must conform to the standards prescribed for adjustment signals.
Use an oscilloscope to check that the video signal is terminated with a 75 Ω resistor, the amplitude of the sync signal component, video component and burst signal are approx. 0.3 Vp-p, 0.7 Vp-p and 0.3 Vp-p, respectively and that they are flat. The relative level of the burst signal and the red signal shall be 0.30:0.66.
The color bar used in an electrical adjustment is shown in Figure A.

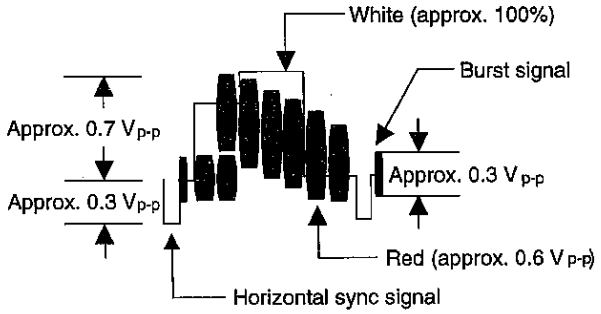


Figure A Color bar signal produced by a pattern generator

*** When a pattern generator is not used**

Shoot a color bar chart (JiGCHART-4) using a perfectly adjusted video camera.
A signal from a perfectly adjusted video camera shooting a color bar chart (JiGCHART-4) can be used as an adjusting signal if the lighting can be set to meet the following conditions: output (75 Ω terminated), the amplitude of the sync signal component, video component and burst signal are approx. 0.3 Vp-p, 0.7 Vp-p and 0.3 Vp-p, respectively. The relative level of the burst signal and the red signal shall be 0.30:0.66. This is shown in Figure B.

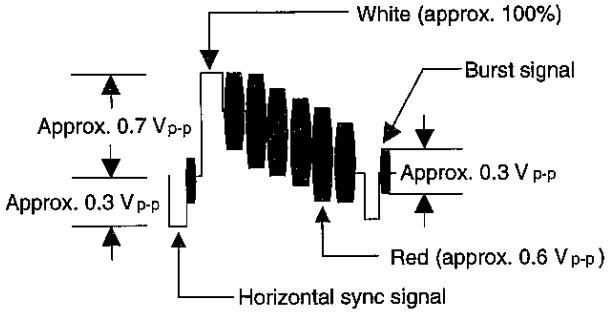


Figure B Color bar signal produced by a video camera

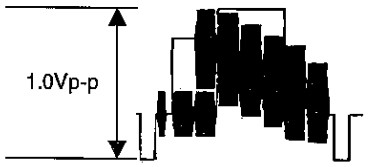
1. Adjustment of fixed data writing

ADD	DATA
23	00
25	01
26	AB

(1) Before starting Y/C adjustment, be sure to write the specific data in the addresses listed left.
If the data listed left is written after Y/C adjustment, adjusting values may deviate.
* Before starting Y/C adjustment, write 00 to the address 31.
* At the end of Y/C and LCD adjustment, write FF to the address 31.

2. Adjustment of input Y level

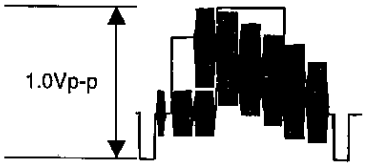
Measuring instrument	Oscilloscope
Mode	VCR STOP
Input signal	Color bar
Measuring point	TL801
Adjustment address	32
Adjustment level	1.0 Vp-p ± 40 mVp-p



(1) Input the color bar signal into the video input/output terminal in the VCR STOP mode.
(2) Enter the VCR adjustment mode with an adjustment remote control, and select the address 32.
Select the address, using the FF or REW key, and fix it with the PB key.
(3) Make an adjustment so as to get 1.0 Vp-p between SYNC TIP and WHITE PEAK on TL801.
Select the data, using the FF or REW key, and fix it with the PB key.
After the adjustment, press the STOP key, and exit from the adjustment address 32.

3. Adjustment of playback Y level

Measuring instrument	Oscilloscope
Mode	PB
Playback signal	Color bar (JiGWR5-5CSP)
Measuring point	TL801
Adjustment address	27
Adjustment level	1.0 Vp-p ± 40 mVp-p



(1) Set the color bar tape for alignment (JiGWR5-5CSP).
(2) Enter the VCR adjustment mode with an adjustment remote control, and select the address 27.
Select the address, using the FF or REW key, and fix it with the PB key. (It will automatically set the playback mode.)
(3) Make an adjustment so as to get 1.0 Vp-p between SYNC TIP and WHITE PEAK on TL801.
Select the data, using the FF or REW key, and fix it with the PB key.
After the adjustment, press the STOP key, and exit from the adjustment address 27.

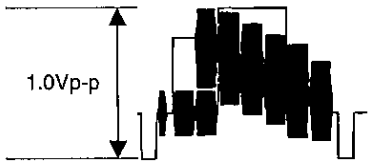
4. Adjustment of Y-FM carrier f0

Measuring instrument	Frequency counter
Mode	VCR STOP
Input signal	No input
Measuring point	TL7401
Adjustment address	33
Adjustment level	4.20 ± 0.02 MHz

(1) Input the no-signal into the video input/output terminal in the VCR STOP mode.
At this time, do not pull out the jack on the Viewcam side.
(2) Enter the VCR adjustment mode with an adjustment remote control, and select the address 33.
Select the address, using the FF or REW key, and fix it with the PB key.
(3) Make an adjustment so that the frequency counter indicates 4.2 MHz on TL7401.
Select the data, using the FF or REW key, and fix it with the PB key.
After the adjustment, press the STOP key, and exit from the adjustment address 33.

5. Adjustment of Y-FM deviation

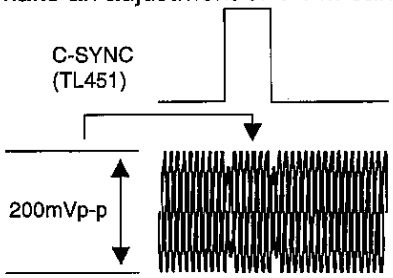
Measuring instrument	Oscilloscope
Mode	REC/PB (self-playback/recording)
Input signal	Color bar
Measuring point	TL801
Adjustment address	34
Adjustment level	1.0 Vp-p ± 40 mVp-p



(1) Set the recordable tape.
(2) Before entering the adjustment mode, make self-playback/recording of color bar with an external output.
Measure whether the playback output at this time is 1.0 Vp-p on TL801.
(3) Enter the VCR adjustment mode with an adjustment remote control, and select the address 34.
Select the address, using the FF or REW key, and fix it with the PB key.
(4) When decreasing by 10 mVp-p as compared to the measurement value of (2), increase the data of address 34 by about 5 (digit). (Reference)
When increasing by 10 mVp-p as compared to the measurement value of (2), decrease the data of address 34 by about 5 (digit). (Reference)
Select the address, using the FF or REW key, and fix it with the PB key.
(5) Release the adjustment mode, and make self-playback/recording again. When the measuring value at this time is in the standard value, the adjustment is completed. If it is not in the standard value, repeat the steps (2) - (4).
(6) After completing the adjustment of (5), check the adjusting value of Y-FM carrier f0 (4.2 MHz in no input).
When the measuring value exceeds the standard value of carrier f0, make an adjustment of Y-FM carrier f0 again.

6. Adjustment of Y recording current

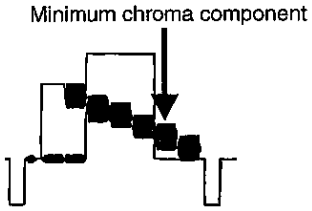
Measuring instrument	Oscilloscope
Mode	VCR STOP
Input signal	Color bar
Measuring point	TL7401
Adjustment address	35
Adjustment level	200 ± 10 mVp-p



(1) Input the color bar signal into the video input/output terminal in the VCR STOP mode.
(2) Enter the VCR adjustment mode with an adjustment remote control, and select the address 35.
Select the address, using the FF or REW key, and fix it with the PB key.
(3) Make an adjustment so that the SYNC TIP portion gets 200 mVp-p on TL7401.
Select the data, using the FF or REW key, and fix it with the PB key.
After the adjustment, press the STOP key, and exit from the adjustment address 35.

7. Adjustment of comb filter

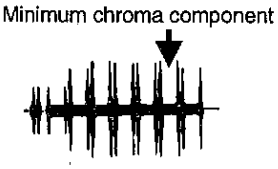
Measuring instrument	Oscilloscope
Mode	VCR STOP
Input signal	Color bar
Measuring point	TL404
Adjustment address	Phase: 36, Gain: 37
Adjustment level	Minimum chroma component



(1) Input the color bar signal into the video input/output terminal in the VCR STOP mode.
(2) Enter the VCR adjustment mode with an adjustment remote control, and select the address 36.
Select the address, using the FF or REW key, and fix it with the PB key.
(3) Make an adjustment so as to minimize the chroma component on TL404.
Select the data, using the FF or REW key, and fix it with the PB key.
After the adjustment, press the STOP key, and exit from the adjustment address 36.
(4) Enter the VCR adjustment mode with an adjustment remote control, and select the address 37.
Select the address, using the FF or REW key, and fix it with the PB key.
(5) Make an adjustment so as to minimize the chroma component on TL401.
Select the data, using the FF or REW key, and fix it with the PB key.
After the adjustment, press the STOP key, and exit from the adjustment address 37.
(6) Repeat the steps (2) - (3).

8. Adjustment of chroma emphasis f0

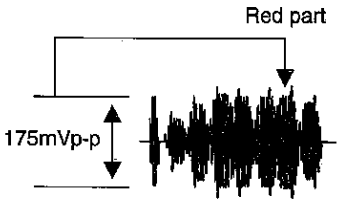
Measuring instrument	Oscilloscope
Mode	VCR STOP
Input signal	Color bar
Measuring point	TL7402
Adjustment address	38
Adjustment level	Minimum chroma component



(1) Input the color bar signal into the video input/output terminal in the VCR STOP mode.
(2) Enter the VCR adjustment mode with an adjustment remote control, and select the address 38.
Select the address, using the FF or REW key, and fix it with the PB key.
(3) Make an adjustment so as to get minimum chroma component on TL7402.
Select the data, using the FF or REW key, and fix it with the PB key.
After the adjustment, press the STOP key, and exit from the adjustment address 38.

9. Adjustment of C recording current

Measuring instrument	Oscilloscope
Mode	VCR STOP
Input signal	Color bar
Measuring point	TL7402
Adjustment address	39
Adjustment level	175 ± 10 mVp-p

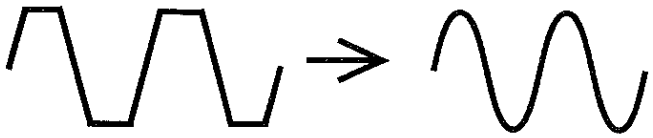


(1) Input the color bar signal into the video input/output terminal in the VCR STOP mode.
(2) Enter the VCR adjustment mode with an adjustment remote control, and select the address 39.
Select the address, using the FF or REW key, and fix it with the PB key.
(3) Make an adjustment so that the amplitude of red portion gets 175 mVp-p on TL7402.
Select the data, using the FF or REW key, and fix it with the PB key.
After the adjustment, press the STOP key, and exit from the adjustment address 39.

5-1-6. Adjustment of audio circuit

1. Adjustment of filter f0

Measuring instrument	Oscilloscope
Mode	PB
Input signal (tape)	JiGWR5-5CSP
Measuring terminal	TL605/AUDIO.OUT
Adjustment address	21
Adjustment value	Clear the waveform



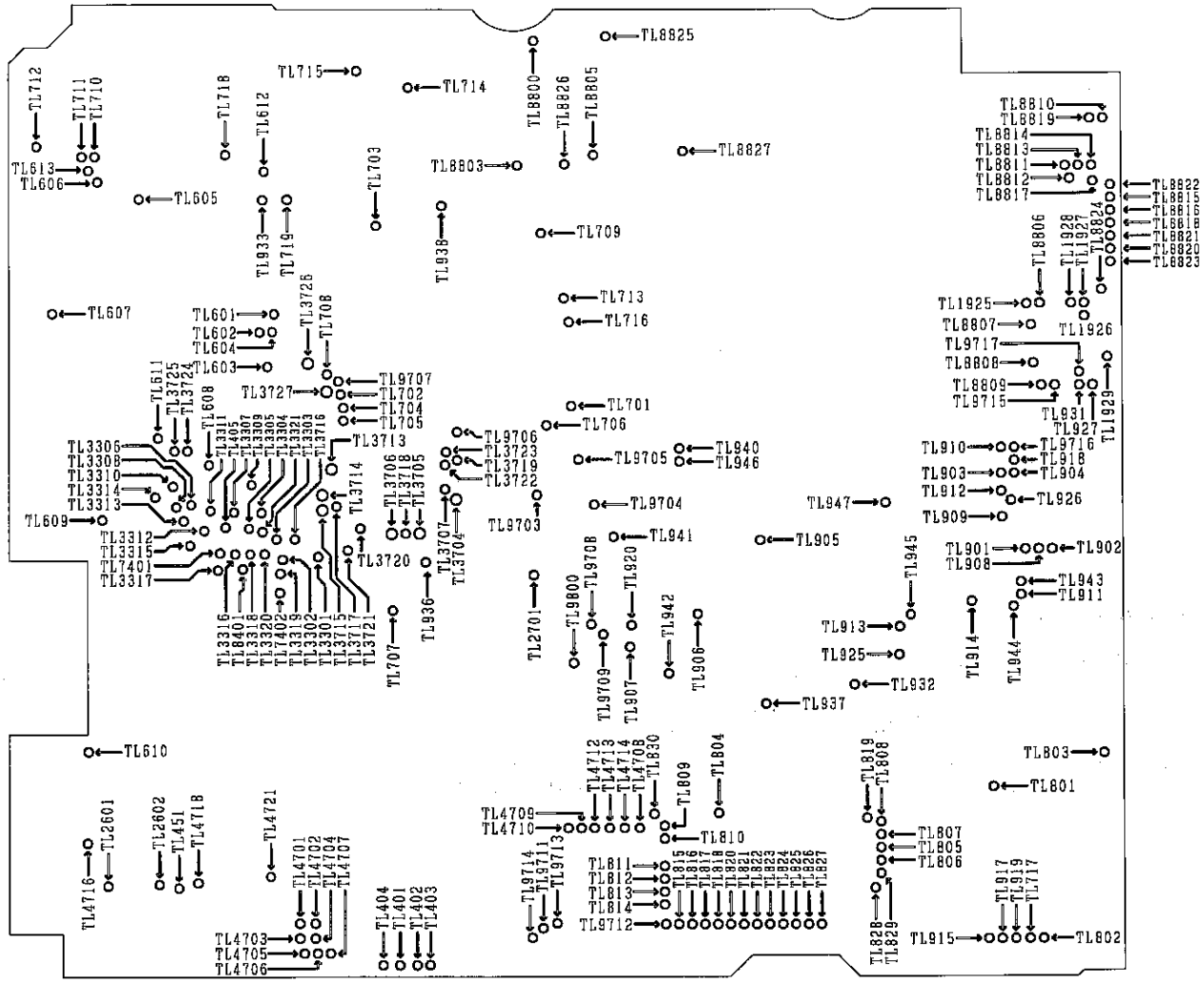
1) Set the alignment tape (JiGWR5-5CSP)
2) Using the adjustment remote controller (RRMCG0033TASA), set the VCR adjustment mode, and set the address "21" with the operation switch (FF/REWIND key).
3) Play back the standard tape.
4) Using the operation switch (FF/REWIND key), make an adjustment so that the most clear playback waveform is obtained on TL605.
5) Press the operation switch (PLAYBACK key) to write the data.
6) Press the operation switch (STOP key) to exit from the address "21".
(The address "21" blinks.)

Audio Check
Checking of self-recording/playback

Measuring instrument	Valve voltmeter (oscilloscope)
Mode	REC → PB
Input signal (tape)	400 Hz, -8 dBs (872 mVp-p)
Measuring terminal	Audio IN/OUT
Adjustment address	—
Adjustment value	-8 dBs ± 4 dBs (580 to 1370 mVp-p)

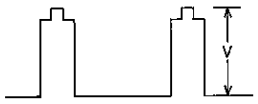
1) Input the audio signal (400Hz, -8dBs) into the Audio line IN/OUT terminal, and record.
2) Connect the valve voltmeter (oscilloscope) to the Audio line IN/OUT terminal.
3) Play back the record, and ascertain that the output waveform level is -8 dBs ± 4 dBs (580 to 1370 mVp-p on the oscilloscope).
4) If there is any deviation from the specified value, perform adjustment again as stated in items 1) above, and check again the self-recording/playback level.

5-1-7. Adjustment of LCD display circuit

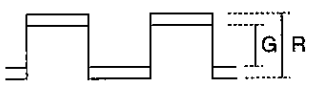


Adjustment procedures and connections are the same as with the VCR section.

1. Contrast adjustment

Measuring point	TL817 (G-OUT)
Address	40
Mode	VCR AV input
Adjusting method	1) Set the data of address 47 at the address 80. 2) Input white 100% as an AV input. 3) Connect TL805 to GND. (The 1H inversion stops.) 4) Connect 220 KΩ between TL803 and GND. 5) Seeing the waveform of TL817 (G-OUT), make an adjustment between the white peak and the sync tip. 
Adjustment standard	3.3V ± 0.1V
Remarks	————

2. R-W/B adjustment

Measuring point	TL817 (G-OUT) TL816 (R-OUT)
Address	41
Mode	VCR AV input
Adjusting method	1) AV input: Nonsignal. 2) TL817 (G-OUT): Oscilloscope CH1 TL816 (R-OUT): Oscilloscope CH2 3) Adjust P-P of TL816 becomes bigger 0.15V than TL817. 
Adjustment standard	±0.1Vp-p
Remarks	————

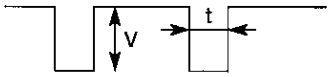
3. B-W/B adjustment

Measuring point	TL817 (G-OUT) TL818(B-OUT)
Address	42
Mode	VCR AV input
Adjusting method	1) AV input: Nonsignal. 2) TL817 (G-OUT): Oscilloscope CH1 3) TL818 (B-OUT): Oscilloscope CH2 4) Adjust P-P of TL818 become bigger 0.1V than TL817.
Adjustment standard	±0.1Vp-p
Remarks	————

4. VCO adjustment

Measuring point	TL808
Address	43
Mode	VCR AV input
Adjusting method	1) AV input : NON Signal 2) Connect the frequency counter to TL808, and adjust the frequency.
Adjustment standard	15.625kHz ± 100Hz
Remarks	————

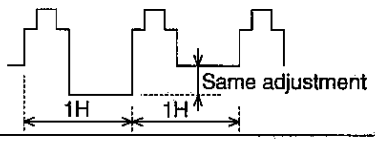
5. H-position adjustment

Measuring point	TL808
Address	44
Mode	VCR AV input
Adjusting method	1) Input the white 100% signal as an AV input. 2) Connect the oscilloscope to TL808, and adjust the pulse width. 
Adjustment standard	3.9µsec ± 0.15µsec
Remarks	————

6. COMMON PULSE adjustment

Measuring point	TL821
Address	22
Mode	VCR AV input
Adjusting method	1) Set the data of address 47 at the address 80. 2) Input the white 100% signal as an AV input. 3) Connect the oscilloscope to TL821, and adjust the pulse width.
Adjustment standard	6.8Vp-p ± 0.1Vp-p
Remarks	————

7. Burst phase adjustment

Measuring point	TL818
Address	49
Mode	VCR AV input
Adjusting method	1) Input the monochrome signal (R) to the AV input. 2) Connect TL805 to GND. (1H inversion stop) 3) Set the data of address 48 to 30. 4) Minimize the signal level difference every 1H. 
Adjustment standard	± 400mV
Remarks	————

8. COM-BIAS adjustment

Measuring point	LCD panel display surface
Address	45
Mode	VCR AV input
Adjusting method	1) Input the white 40% signal as an AV input, and set data of address 47 at the address 80. 2) Set the illuminometer (TOPCON IM-3) on the LCD panel surface (do not allow entry of external light). 3) Connect the illuminometer to the oscilloscope. 4) Make an adjustment so as to minimize the ripple of output waveform. Response time: 0.6 sec 5) Adjust again if longitudinal stripe appears evidently. * Or set to the point where the black is settled deepest with the grey scale signal.
Adjustment standard	Minimum
Remarks	Make an adjustment after aging for 5 minutes or more.

9. W/B adjustment

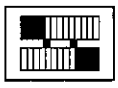
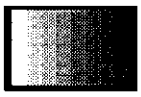
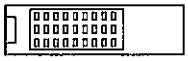
Measuring point	LCD panel display surface
Address	41, 42
Mode	VCR AV input
Adjusting method	1) White fade signal input. 2) Adjust so as to get the same white screen as that of standard monitor. (Adjust again, visually checking as stated in item 2.3.)
Adjustment standard	Standard monitor
Remarks	Make an adjustment after aging for 5 minutes or more.

5-2. ADJUSTMENT OF CAMERA SECTION

5-2-1. Servicing of camera section

(1) Object, measuring instrument and jigs necessary for camera section servicing

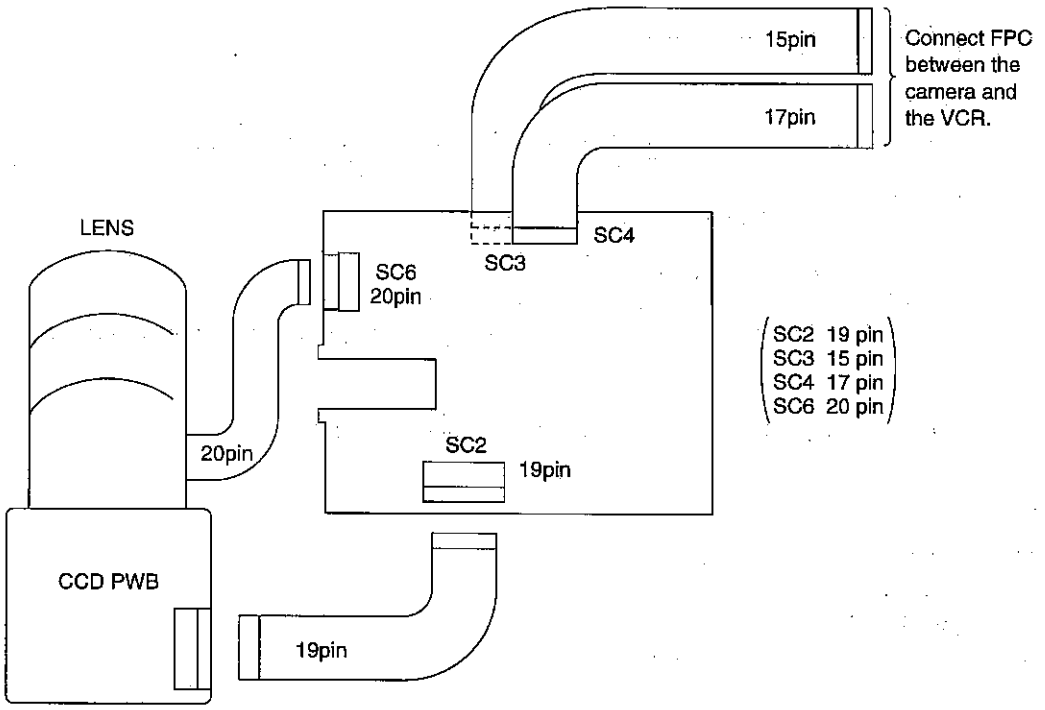
- Gray scale chart
- Color bar chart
- AC adapter
- Vectorscope
- Color temperature conversion filter HOYA "LB-165"
- Extension cable
- Digital voltmeter
- Service Remote Control
- Oscilloscope
- Halogen light (2 pcs.)
- Video output cable
- Color video monitor

NO.	Item	Part Cord	Price Code	Configuration	Note
1	Gray Scale Chart (390 x 520 mm)	JiGCHART-1	CP		
2	Color Bar Chart (240 x 320 mm)	JiGCHART-4	DA		
3	Color Temperature Conversion Filter	JiGHOYA-LB165	BN		
4	Service Remote Control	RRMCG0033TASA	BT		

Note:

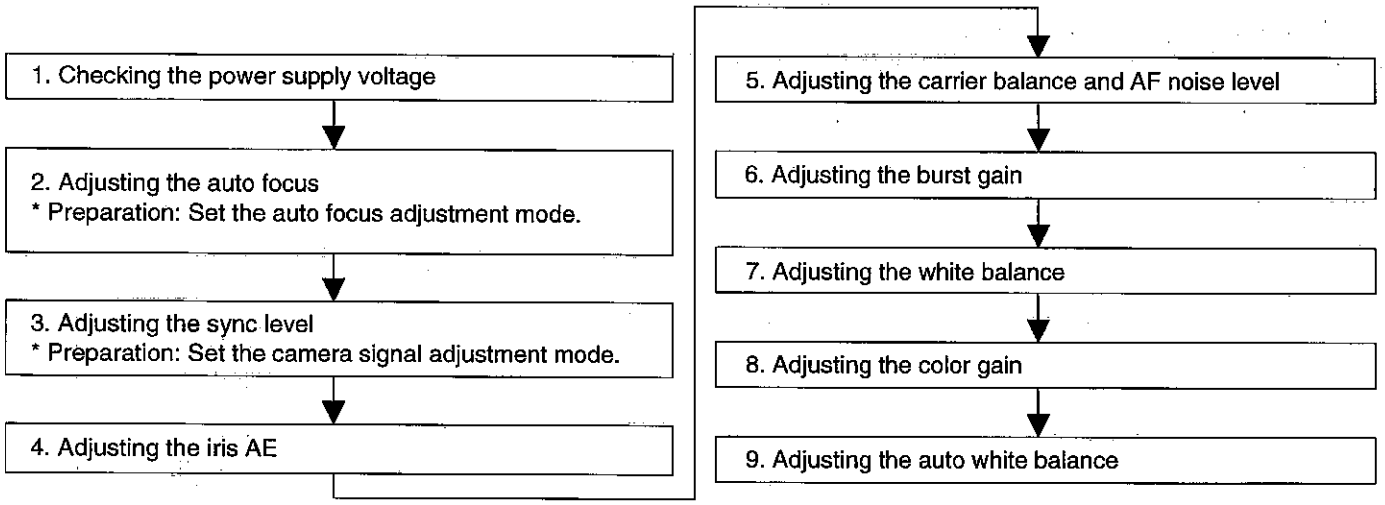
1. Color temperature conversion filter (jig item No.3) may be obtained from HOYA Optics in your local market.
2. N: Indicates the new jigs.

• **Connections for Camera Section Servicing**



5-2-2. Adjustment procedures

This adjusting procedure covers all the steps for conducting the adjustments all the way. There are some steps that may be skipped, depending on the specific needs for servicing and adjustment.


1. Checking the power supply voltage
2. Adjusting the auto focus
* Preparation: Set the auto focus adjustment mode.
3. Adjusting the sync level
* Preparation: Set the camera signal adjustment mode.
4. Adjusting the iris AE
5. Adjusting the carrier balance and AF noise level
6. Adjusting the burst gain
7. Adjusting the white balance
8. Adjusting the color gain
9. Adjusting the auto white balance

5-2-2-1. Checking the power supply voltage

• Measuring terminal: CAM 4.9V
CAM 2.9V
CAM 15V
CAM -8V
LENS 5V
• Measuring instrument: Digital voltmeter
* The above is the whole sentence of 5-2-2-1.

• Mount the OSD tool on the P6 connector of camera main PWB, and check the following voltages.

CAM 4.9V	4.9V±0.1V
CAM 2.9V	2.9V±0.1V
CAM 15V	15V±0.1V
-8V	-8V±1V
LENS 5V	4.9V±0.2V

5-2-2-2. Auto focus adjustment

• Basic iris adjustment

Measuring instrument	None
Subject	—
Tape	—
Test point	None
Adjustment address	1FF
Adjustment level	09, 0A, 0B

1) Set up the auto focus adjustment mode. (Write 01 to the address 1FF)
2) Write the adjustment data 09, 0A and 0B one after the other to the address 1FF, the adjustment are as follows.

Data	Adjustment
09	Hall offset
0A	Iris offset
0B	Iris close

• Lens adjustment

Measuring instrument	None
Subject	More than 50 m away
Tape	—
Test point	None
Adjustment address	1FF
Adjustment level	11, 12, 06, 08

1) Set up the auto focus adjustment mode.
   (This is unnecessary after the above basic iris adjustment has been made.)
2) Write the adjustment data 11, 12, 06 and 08 one after the other to the address 1FF. The adjustments are as follows.
3) Write FF to the address 1FE to exit the auto focus adjustment mode.

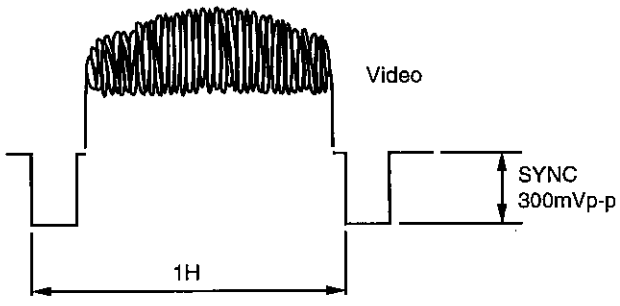
Data	Adjustment
11	Voltage adjustment
12	Optical wide-end adjustment
06	Wide-end focus ∞ position adjustment
08	Tele-end focus ∞ position adjustment

5-2-2-3.

Before starting these adjustments, set up the auto focus adjust.

• Sync level adjustment

Measuring instrument	Oscilloscope
Subject	Anything
Tape	—
Test point	VIDEO OUT (Terminated in 75Ω)
Adjustment address	1FE
Adjustment level	300mVp-p

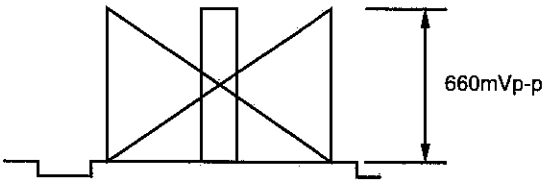


1) Set up the camera signal line adjustment mode. (Write 00 to the address 1FE)
2) Connect the oscilloscope to the VIDEO-OUT. Adjust the sync level to300mVp-p.

5-2-2-4.

• Iris AE adjustment

Measuring instrument	Oscilloscope
Subject	Gray scale
Tape	—
Test point	VIDEO-OUT
Adjustment address	1FD
Adjustment level	660mVp-p



1) Shoot the gray scale in the standard way. Observe the VIDEO-OUT signal on the oscilloscope screen and rewrite the data of address 1FD to get an amplitude of 660mVp-p as shown above.

5-2-2-5.

• Carrier balance , AF noise level adjustment

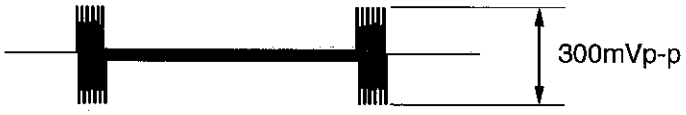
Measuring instrument	None
Subject	Anything
Tape	—
Test point	None
Adjustment address	1FF
Adjustment level	01

1) Preparation : write FF to address 19C, 19D, 19E, 19F, 1A0, 1A1.
2) Write the data 01 to the address 1FF.
   The following adjustments are automatically carried on ; ① Carrier balance adjustment
   ② AF noise level adjustment
   at AGC Gain Min , AGC Gain Max and Gain up.

5-2-2-6.

• Burst gain adjustment

Measuring instrument	Oscilloscope
Subject	None
Tape	—
Test point	VIDEO OUT (Terminated in 75 Ω)
Adjustment address	1F9
Adjustment level	300mVp-p

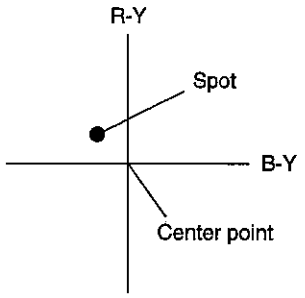


1) Measure the burst signal level on the oscilloscope. Using the address 1F9, adjust the burst amplitude to 300mVp-p.

5-2-2-7.

• White balance adjustment

Measuring instrument	Vector scope
Subject	Gray scale
Tape	—
Test point	VIDEO OUT (Terminated in 75 Ω)
Adjustment address	R-GAIN 010, B-GAIN 012
Adjustment level	R-Gain 19 % ± 3 % B-Gain -11 % ± 3 %

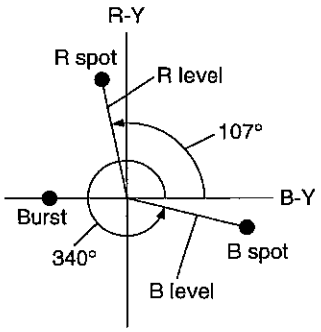


1) Adjust the spot to the center of vector scope (R-Y : 19%, B-Y : -11%) using address 010 and 012.

5-2-2-8.

• Color gain adjustment

Measuring instrument	Vector scope
Subject	Color bar chart
Tape	—
Test point	VIDEO OUT (Terminated in 75 Ω)
Adjustment address	R-Y GAIN 0DD B-Y GAIN 0DB R-Y MAT 0D7 B-Y MAT 0D9
Adjustment level	R-Y GAIN; Burst ratio 1.2 ± 0.1 B-Y GAIN; Burst ratio 1.0 ± 0.1 R-Y MAT; 107 ± 2° B-Y MAT; 340 ± 2°

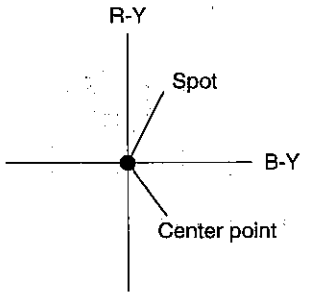


1) Using the address 0DD, adjust the R level to a burst ratio of 1.2. With the address 0DB, adjust the B level to a burst ratio of 1.0.
2) Using the address 0D7, adjust the R phase to 107°. With the address 0D9, adjust the B phase to 340°.
3) Repeat the above steps 1) and 2).

5-2-2-9.

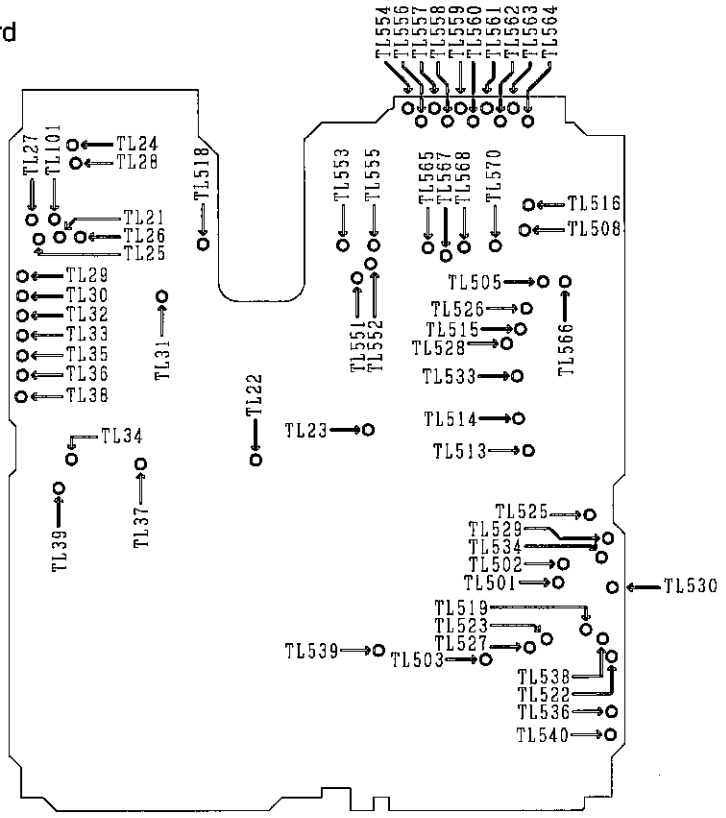
• Auto white balance adjustment

Measuring instrument	Vector scope
Subject	Gray scale
Tape	—
Test point	VIDEO OUT (Terminated in 75 Ω)
Adjustment address	R-OUT DOOR 016 B-OUT DOOR 018
Adjustment level	R-OUT DOOR; 0 ± 3 % B-OUT DOOR; 0 ± 3 %



1) Attach the color temperature conversion filter (JIGHOYA-LB165) to the front of the lens.
2) Using the addresses R-OUT DOOR 016 and B-OUT DOOR 018, adjust the spot to the center.
3) Take off the color temperature conversion filter.
4) Write FF to the address 1FE to exit camera signal adjustment mode.

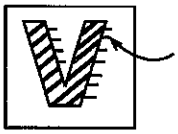
• Test Points on the CAMERA Bord



5-3. TROUBLE SHOOTING

5-3-1. Classification of troubles

No function at all	YES	Check the Power circuit and system control circuit.
No tape ejection	YES	Check the system control and loading motor circuit.
No LCD light-up	YES	Check the inverter transformer and power circuit.
No picture in EE mode	YES	* Check the camera section and Y/C circuit and LCD circuit.
No picture playback	YES	Check the Y/C circuit and head amplifier circuit.
No video recording	YES	Check the Y/C circuit and head amplifier circuit.
Streaking at self-recording/playback	YES	Check the Y/C circuit and head amplifier circuit.



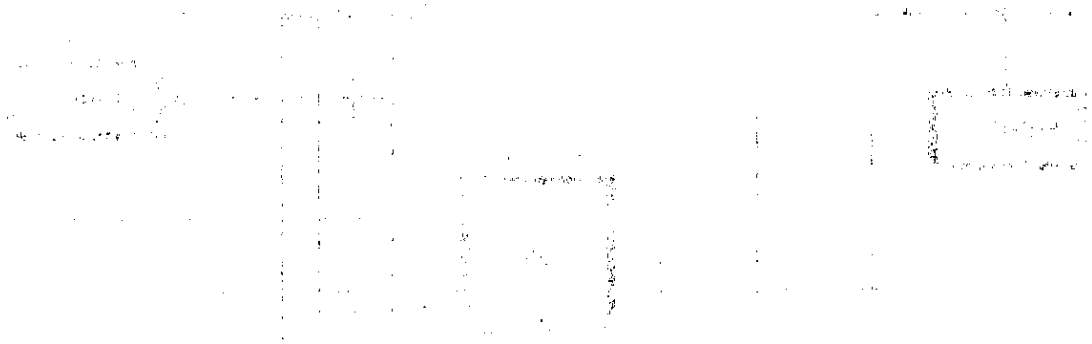
Noises at regular intervals in playback	YES	Check the ATF circuit.
No recorded characters on screen	YES	Check the LCD circuit and character generator (IC705).
No color in EE mode	YES	* Check the camera section and Y/C circuit.
No color in playback	YES	Check the Y/C circuit and head amplifier circuit.
No color in recording	YES	Check the Y/C circuit and head amplifier circuit.
No sound	YES	Check the audio circuit.
Error message (e.g. E007)	YES	Check the system controller and CAP MOTOR DRIVER circuit.

Normal

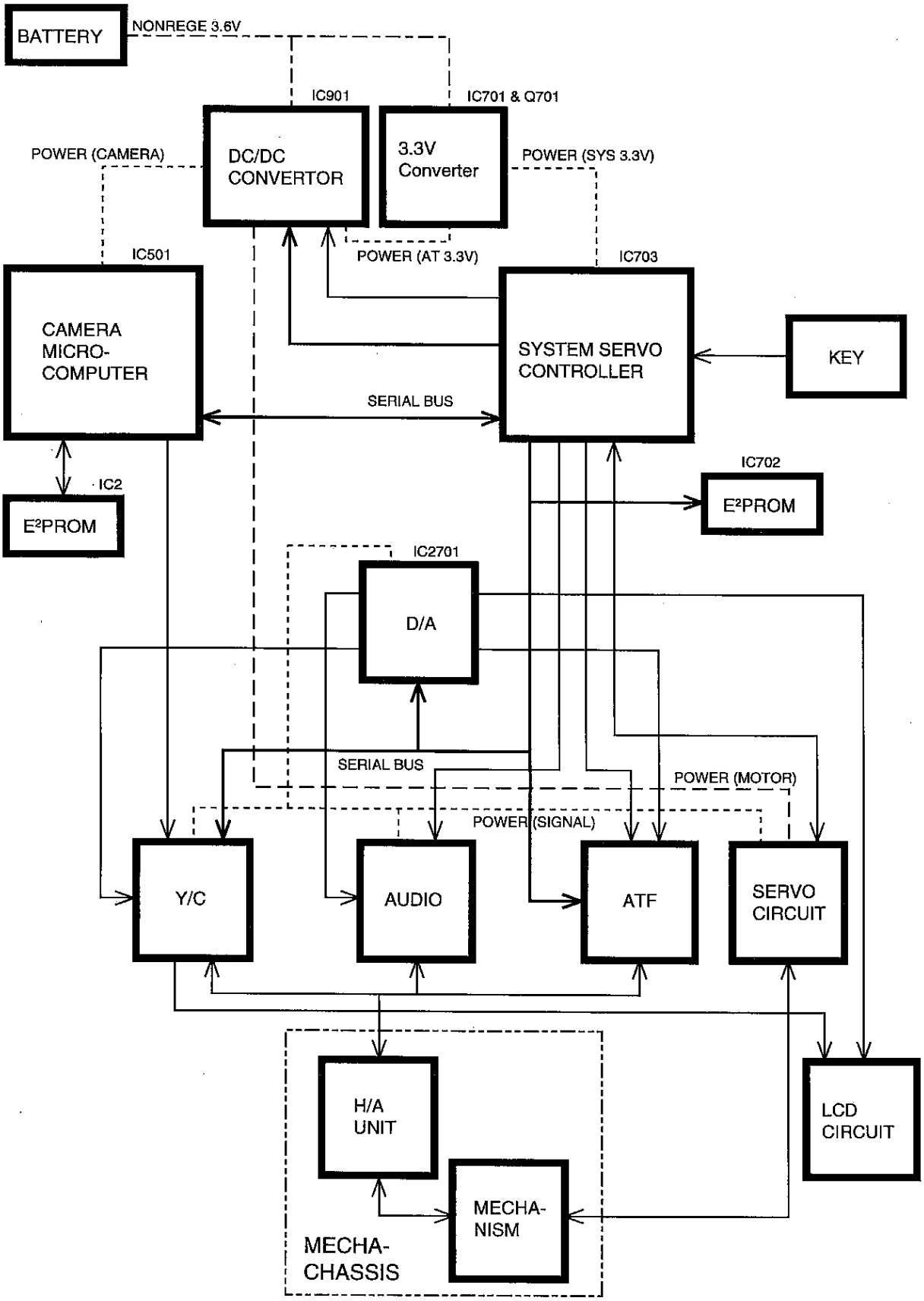
5-3-2. Troubleshooting for the camera section

No picture	YES	Check the lens drive circuit (IC551) and main signal line.
No color	YES	Check IC201 (DSP), and their peripherals.
No auto white balance function	YES	Check IC501 (camera CPU) and its peripherals.
No auto focus function	YES	Check IC501, IC551 and their peripherals.
No power zoom function	YES	Check IC501, IC551 and their peripherals.

Normal



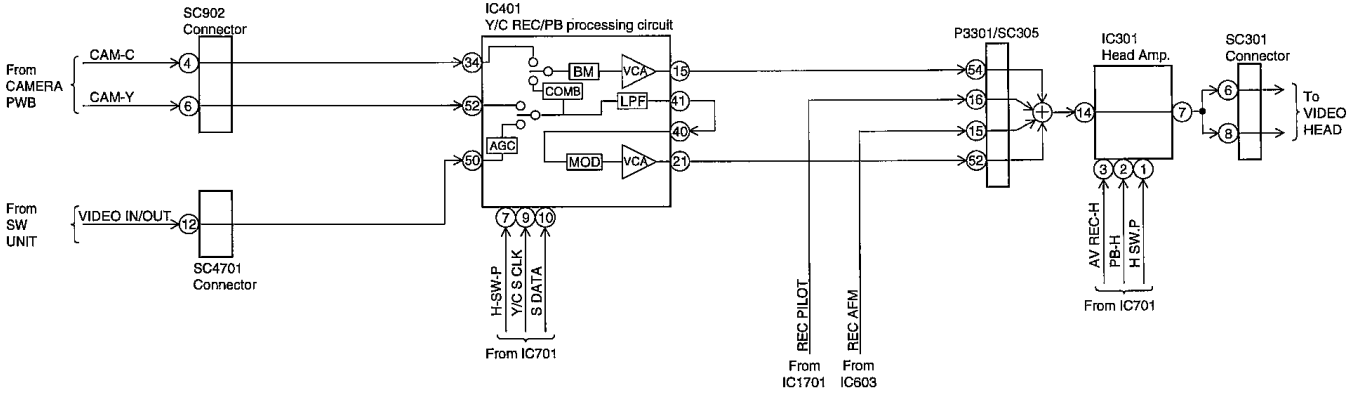
6. SYSTEM BLOCK DIAGRAM

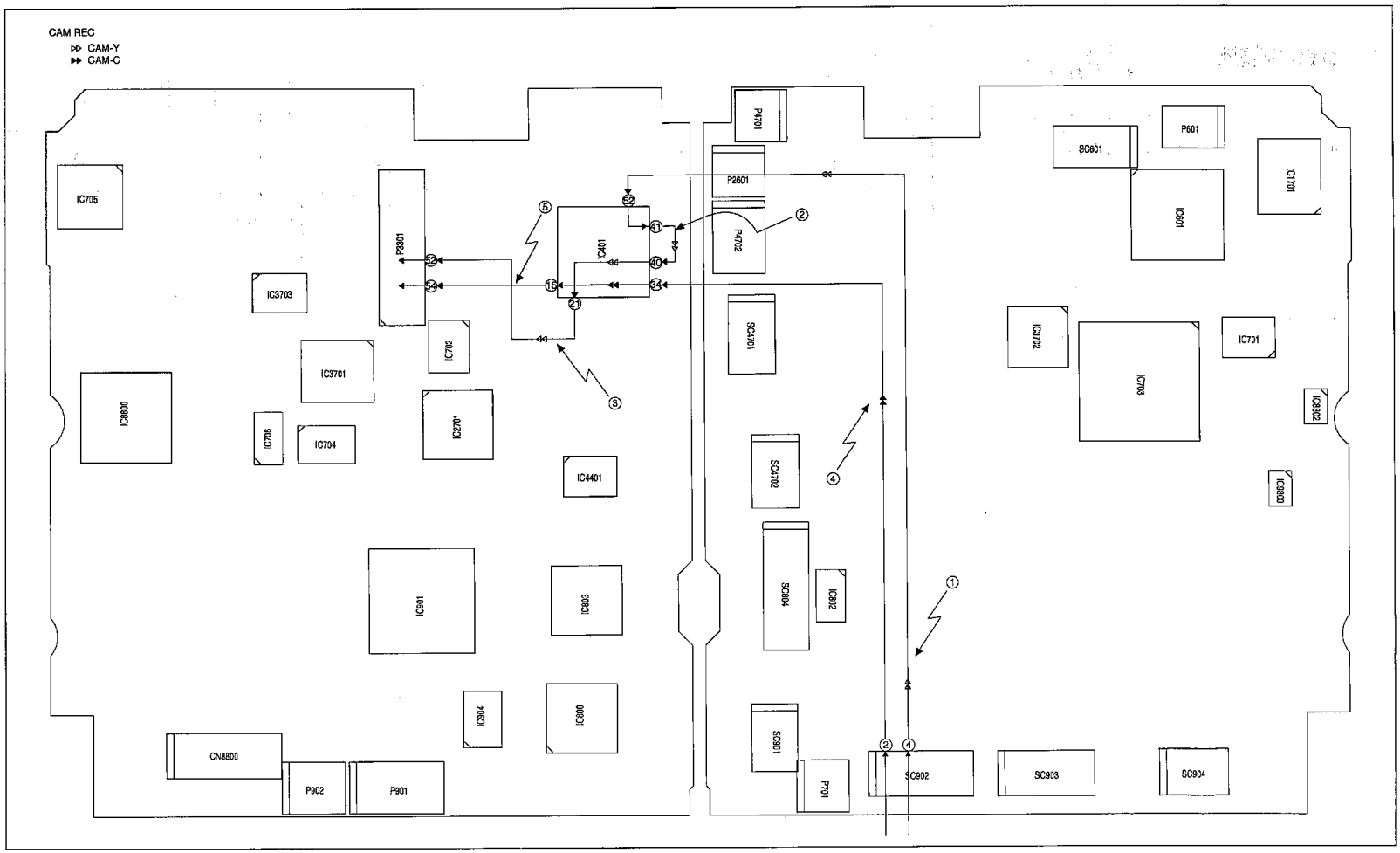


* On this model, all the circuits of the VCR and camera sections are controlled by IC703 and IC501.
  1) IC501 and IC401 are controlled with the serial data from IC703.
  2) IC303, IC702 is a memory that serves to store the adjustment data of the VCR section.
  3) IC2 is a memory that serves to store the adjustment data of the camera section.
  4) The other circuits and ICs are under the L/H level or the PWM control.

VL-E610S/VL-E610H
VL-E660S/VL-E96E
VL-E98E

6-1. VCR SECTION BLOCK DIAGRAM Y/C recording signal flow

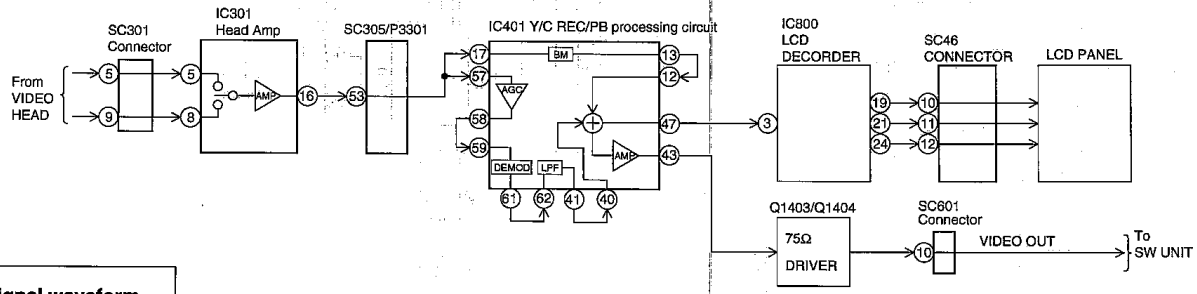




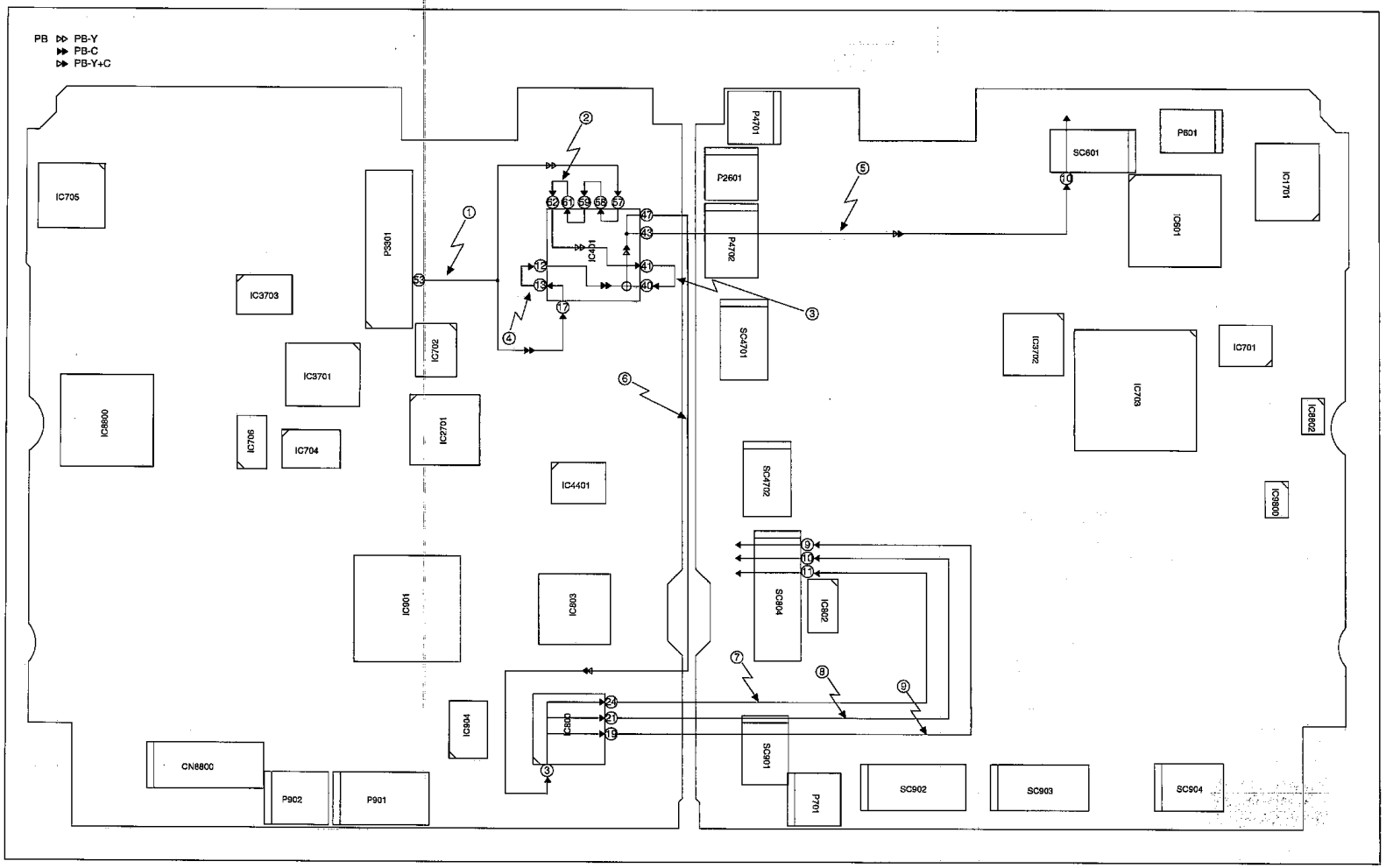
Signal waveform	Signal waveform
① (IC401 ㊷ Pin)	④ (IC401 ㉞ Pin)
1.0Vp-p (SYNC Tip~100% White Peak)	286mp-p (BURST)
② (IC401 ㊶ Pin)	⑤ (IC401 ⑮ Pin)
500mVp-p (SYNC Tip~100% White Peak)	175mVp-p (BURST)
③ (IC401 ㉑ Pin)	
200mVp-p	

VL-E610S/VL-E610H
VL-E660S/VL-E96E
VL-E98E

6-2. VCR SECTION BLOCK DIAGRAM Y/C playback signal flow

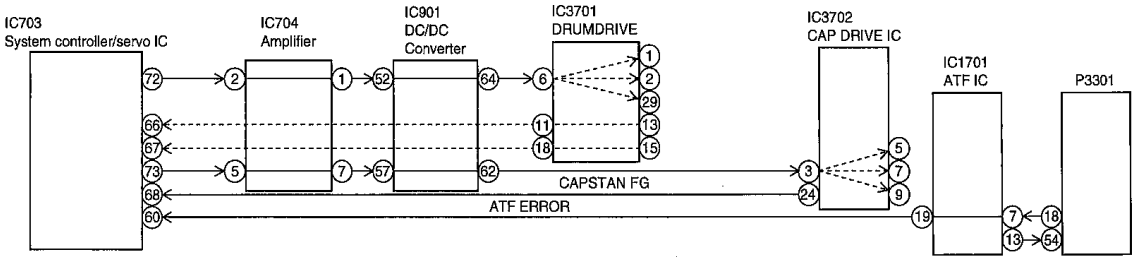


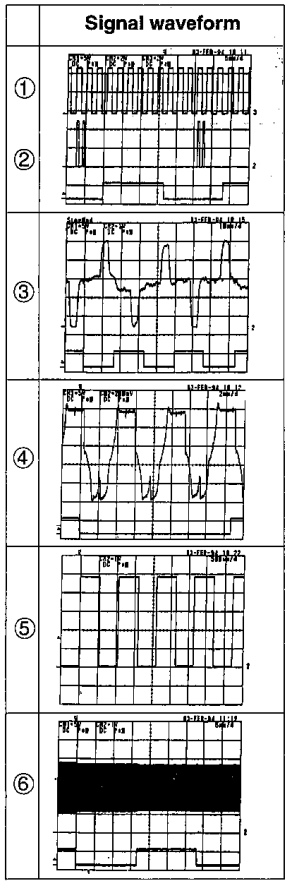
Signal waveform	Signal waveform
① (P3301 ㊸ Pin)	⑥ (IC401 ㊼ Pin)
	1.0Vp-p (SYNC Tip~100% white peak)
② (IC401 ㊷ Pin)	⑦ (IC800 ㉔ Pin)
	3.6Vp-p
③ (IC401 ㊵ Pin)	⑧ (IC800 ㉑ Pin)
	3.6Vp-p
④ (IC401 ⑬ Pin)	⑨ (IC800 ⑲ Pin)
	3.6Vp-p
⑤ (IC401 ㊸ Pin)	
2.0Vp-p (SYNC Tip~100% white peak)	

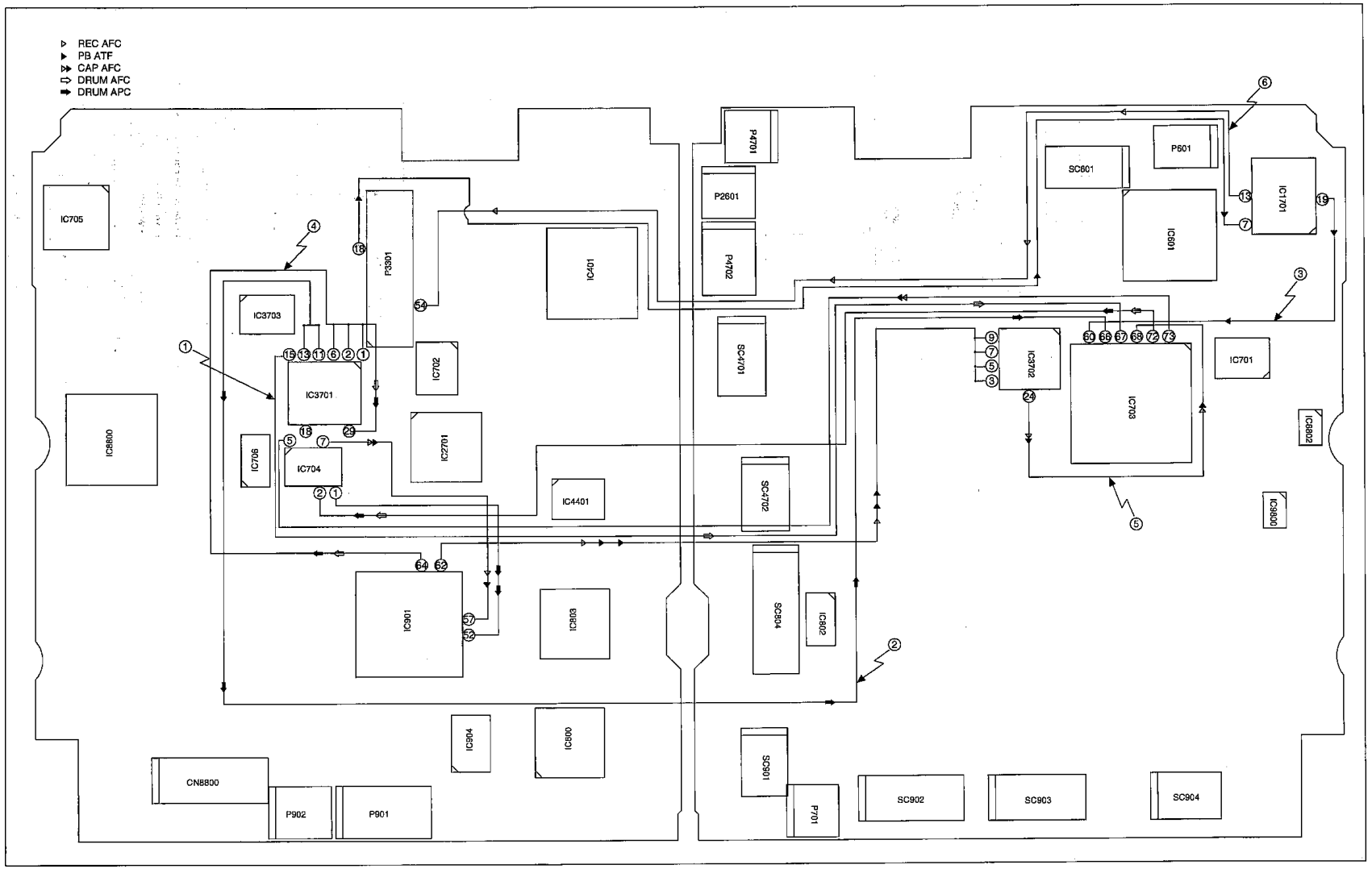


VL-E610S/VL-E610H
VL-E660S/VL-E96E
VL-E98E

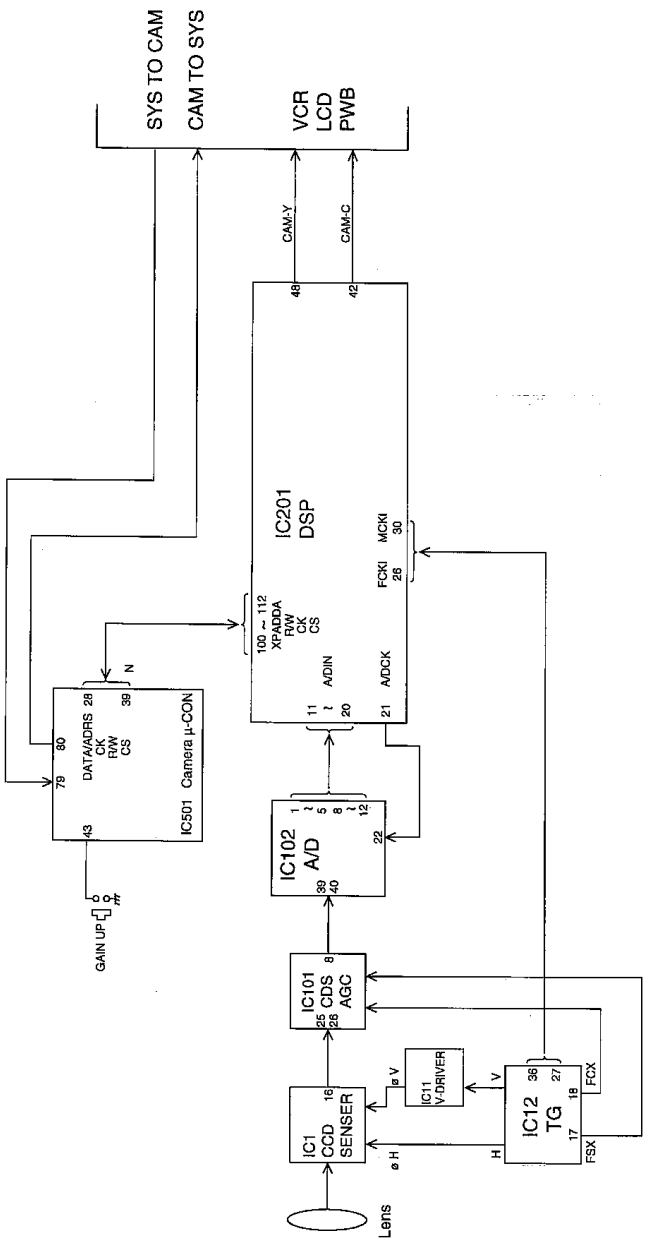
6-3. VCR SECTION BLOCK DIAGRAM Drum/capstan servo system signal flow





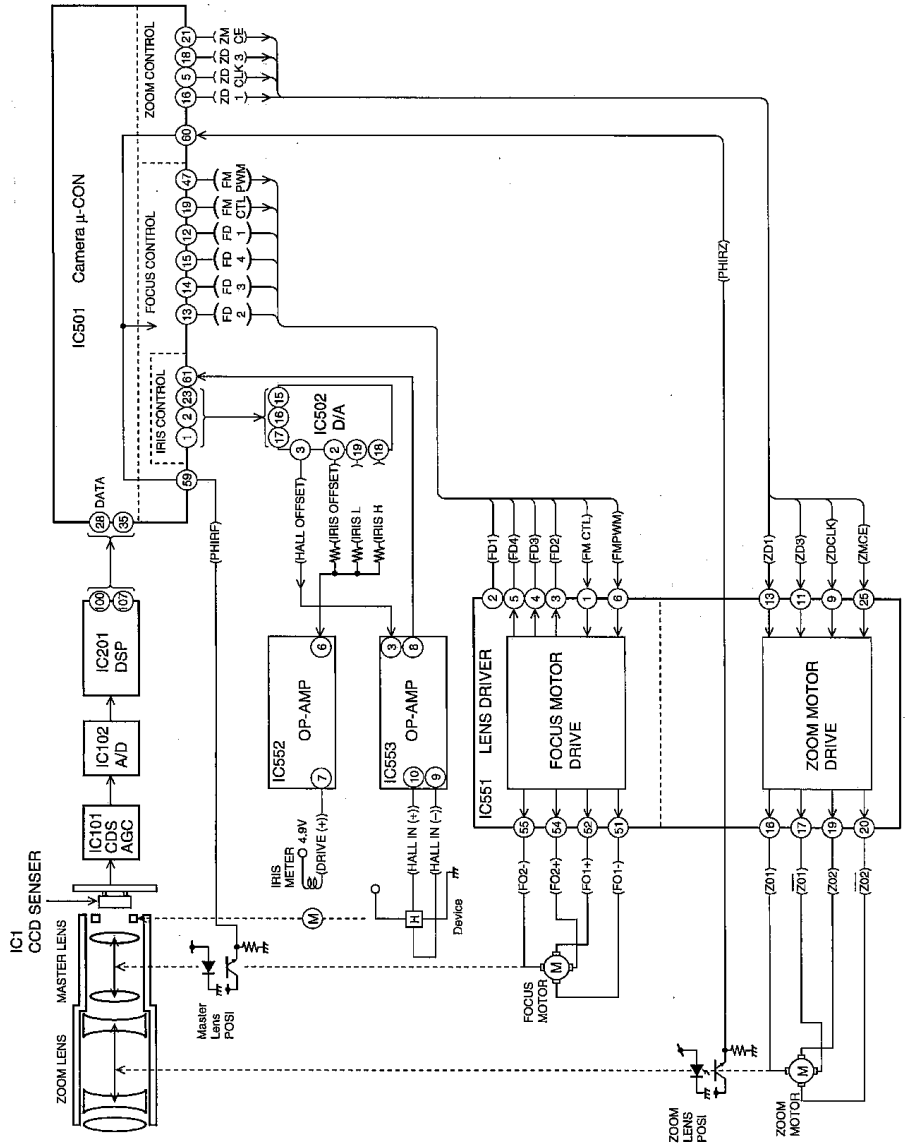


6-4. CAMERA SECTION BLOCK DIAGRAM



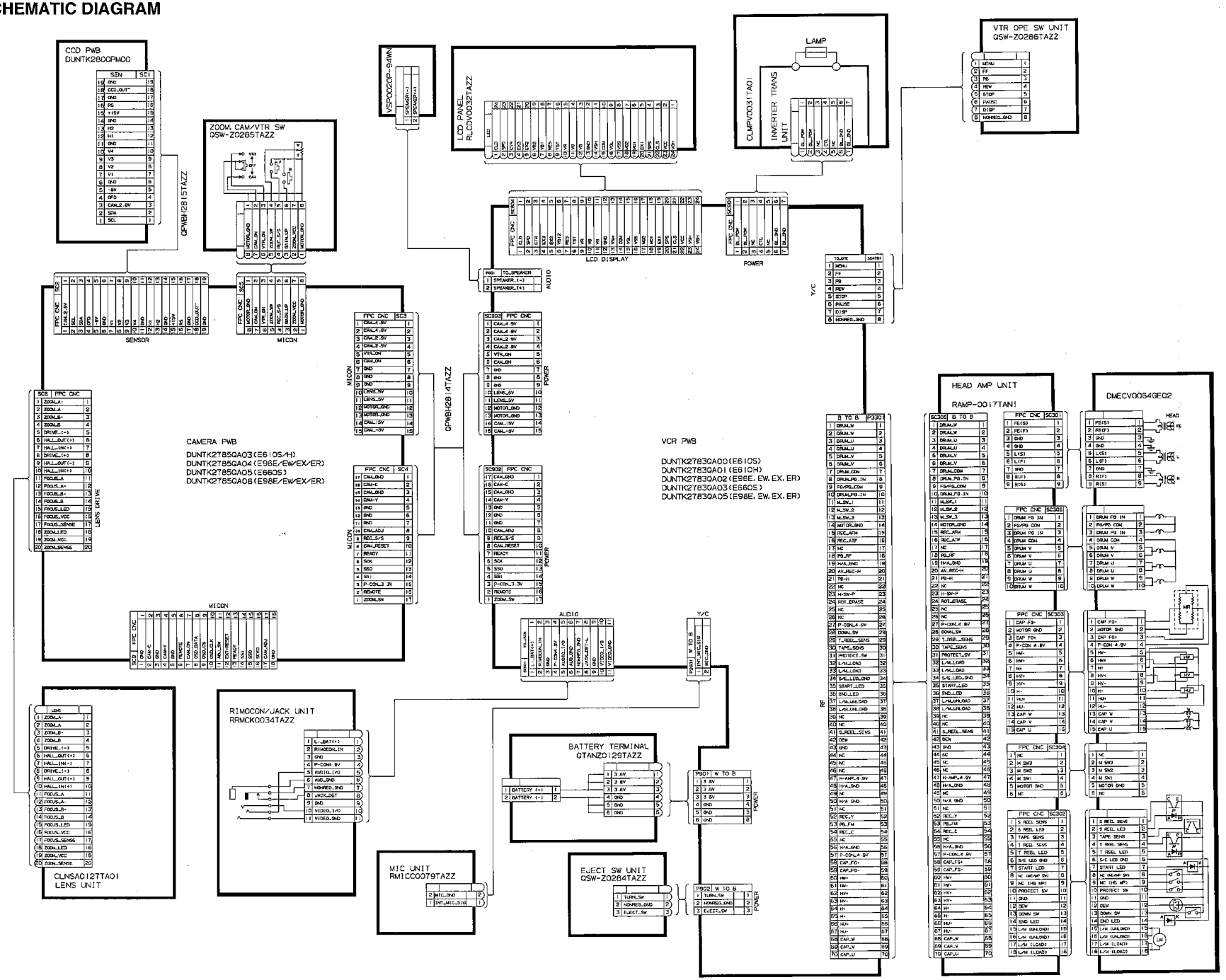
VL-E610S/VL-E610H
VL-E660S/VL-E96E
VL-E98E

6-5. LENS DRIVE BLOCK DIAGRAM



7. SCHEMATIC DIAGRAMS

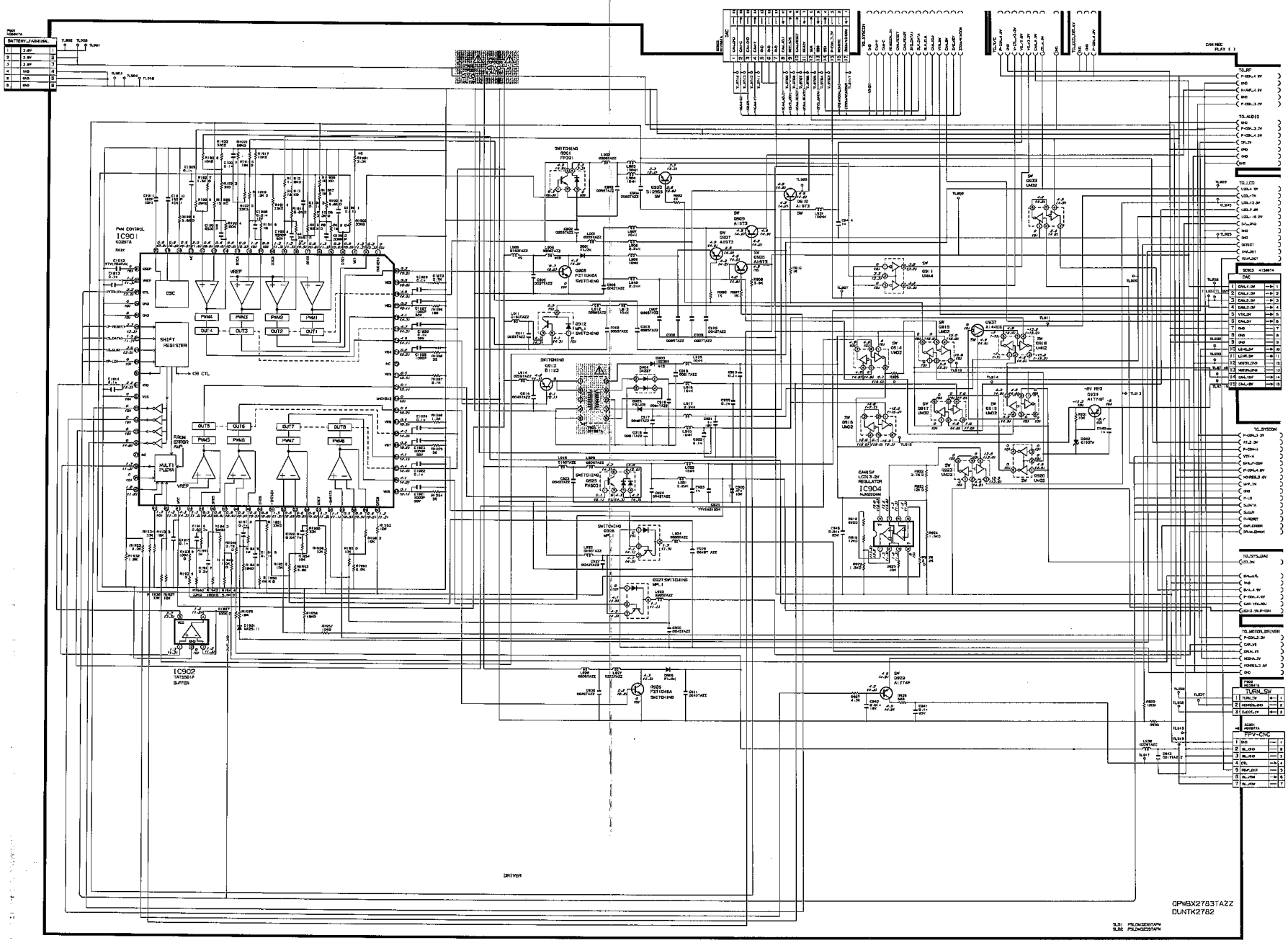
7-1. OVERALL SCHEMATIC DIAGRAM



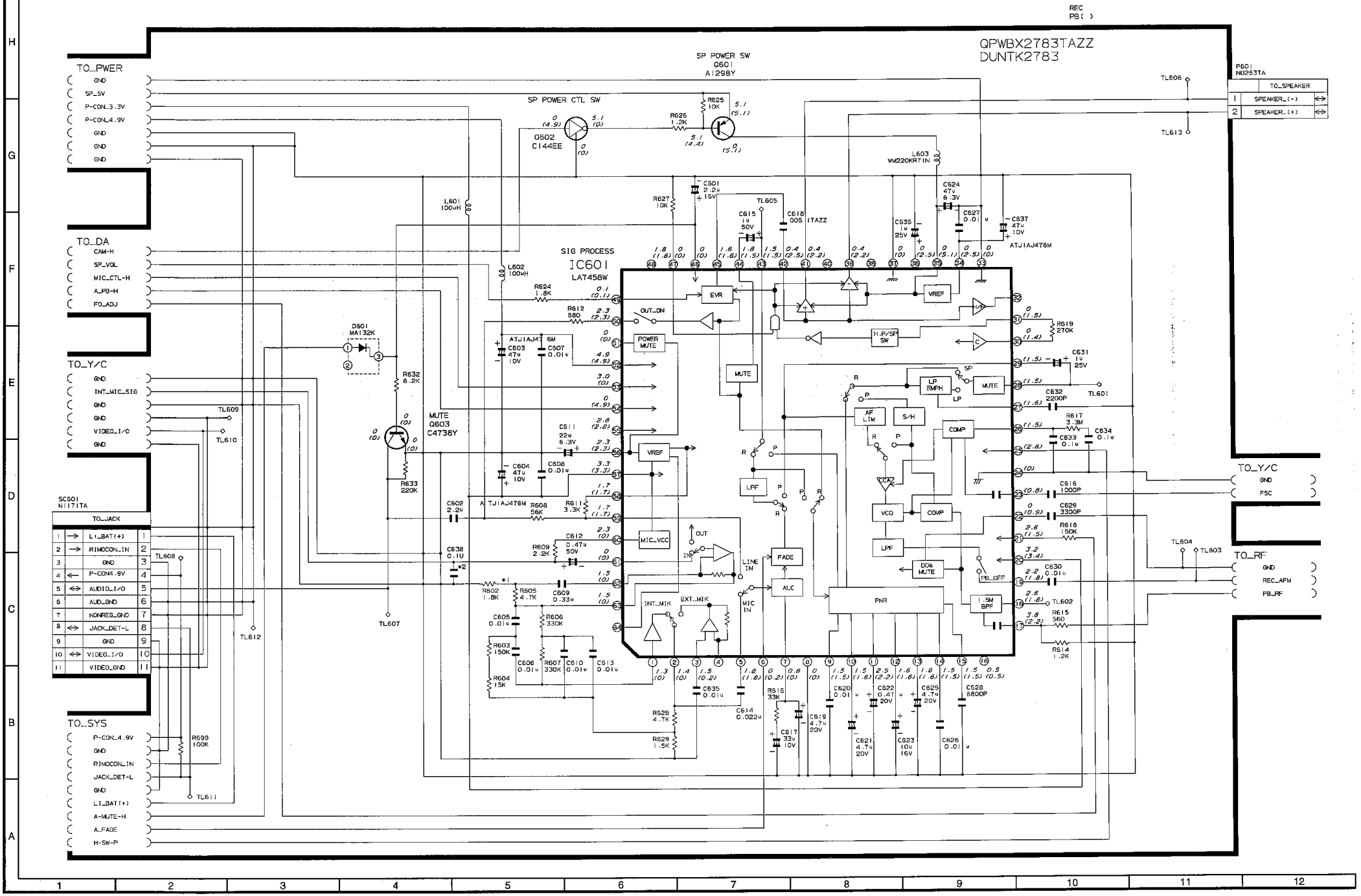
VL-E610S/VL-E610H
VL-E660S/VL-E96E
VL-E98E

7-2. POWER CIRCUIT SCHEMATIC DIAGRAM

⚠ AND SHADED COMPONENTS : SAFETY RELATED PARTS

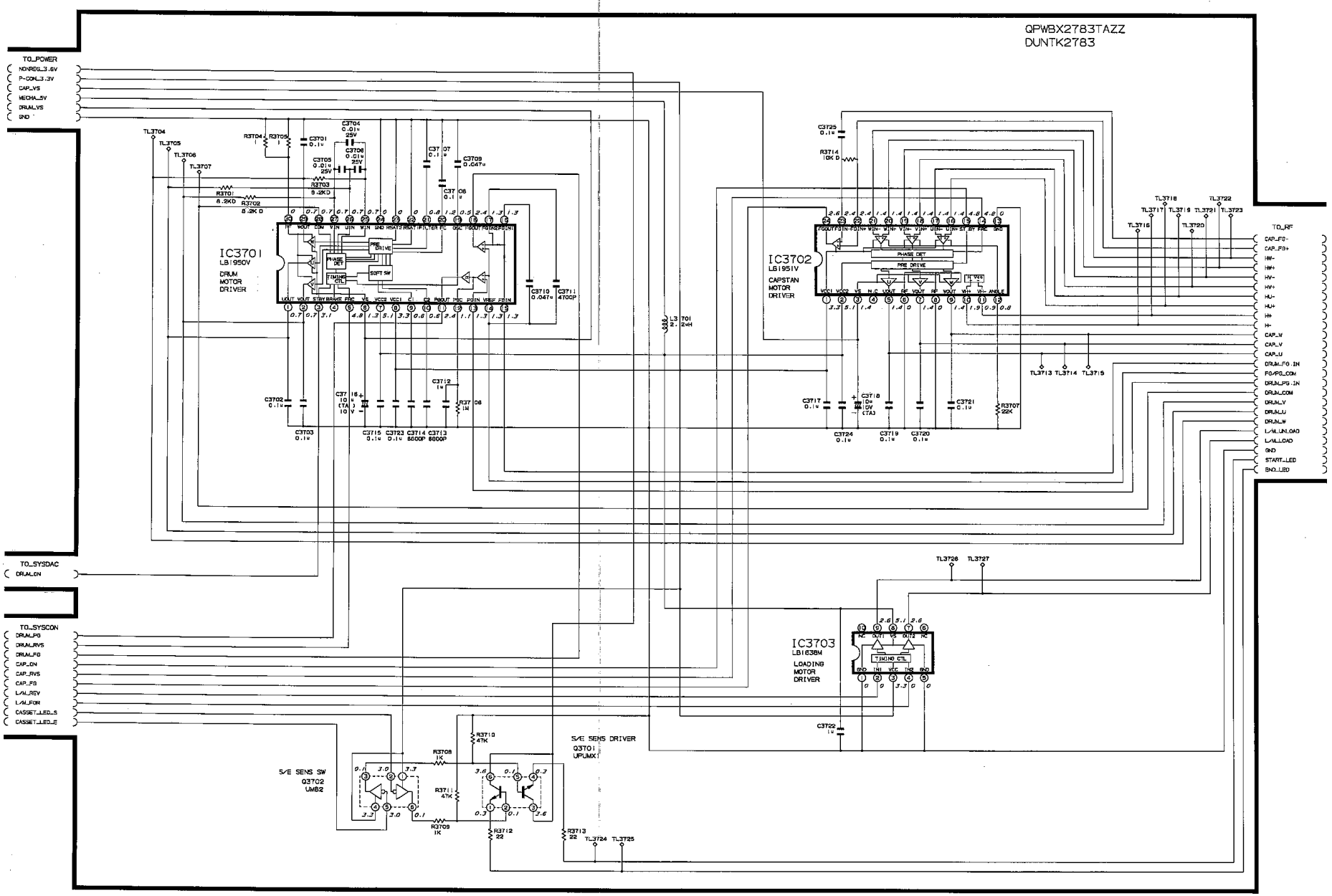


7-3. AUDIO CIRCUIT SCHEMATIC DIAGRAM



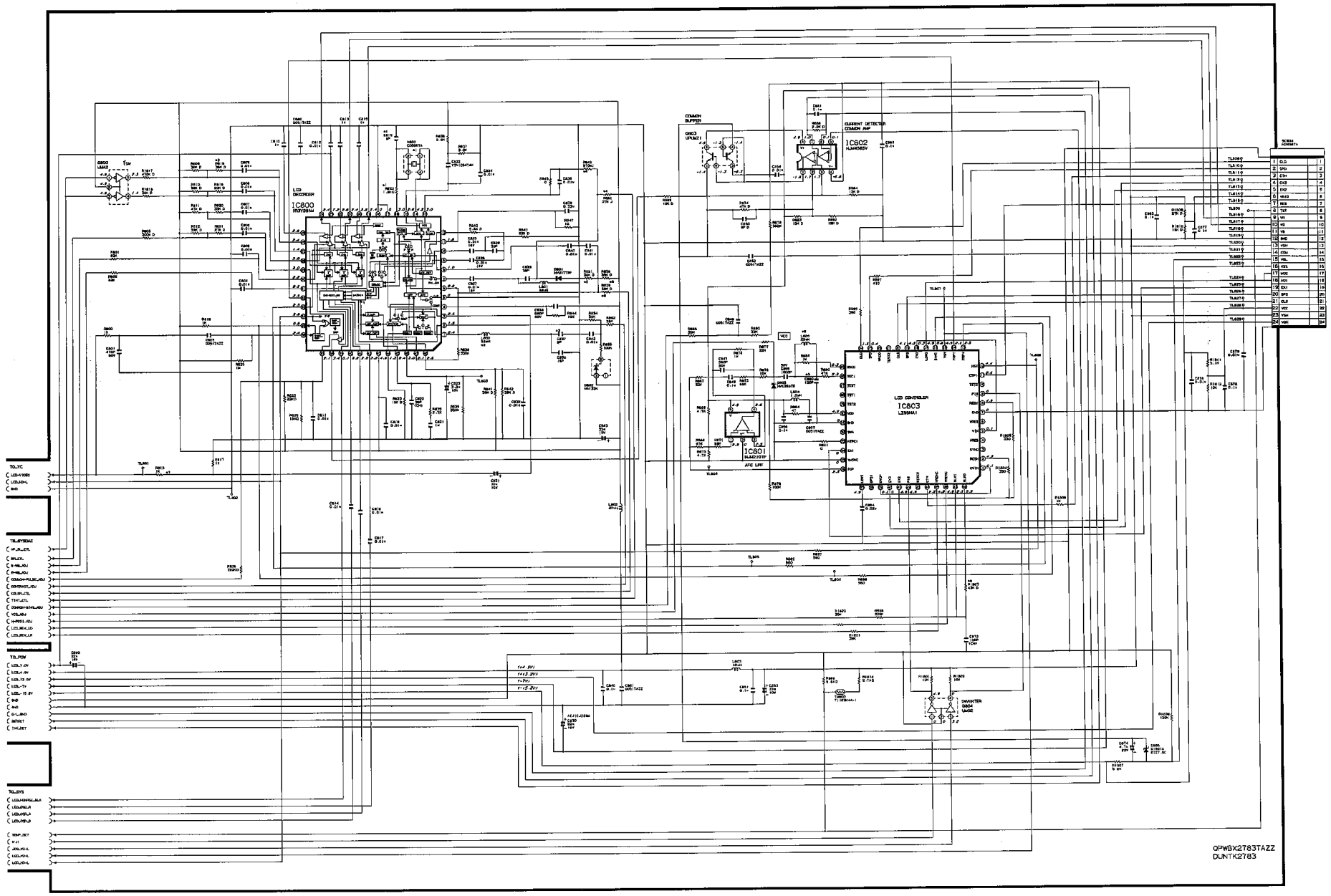
VL-E610S/VL-E610H
VL-E660S/VL-E96E
VL-E98E

7-4. MOTOR DRIVER SCHEMATIC DIAGRAM



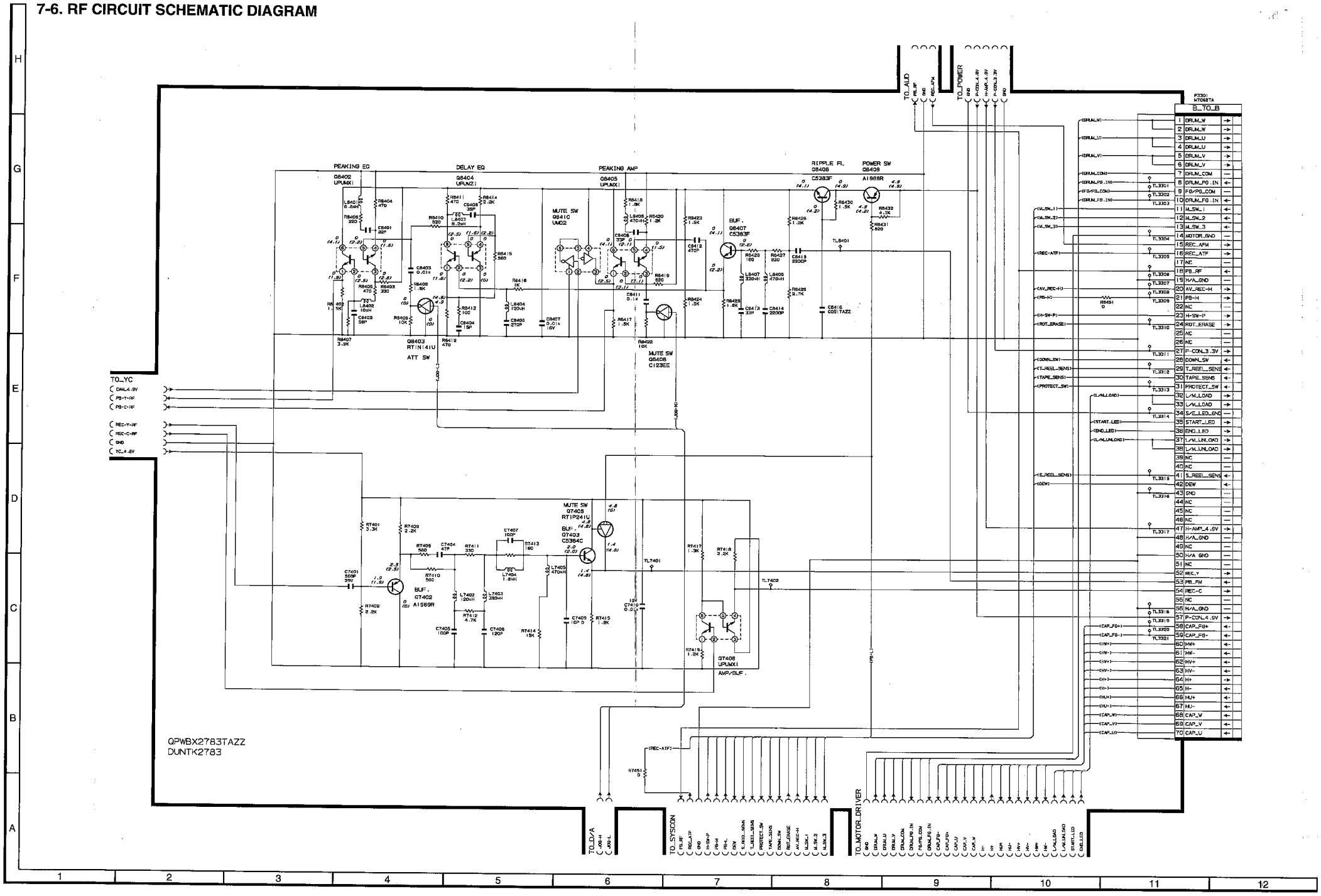
7-5. LCD DISPLAY CIRCUIT SCHEMATIC DIAGRAM

* See Page 7-21 When replacing the IC800



VL-E610S/VL-E610H
VL-E660S/VL-E96E
VL-E98E

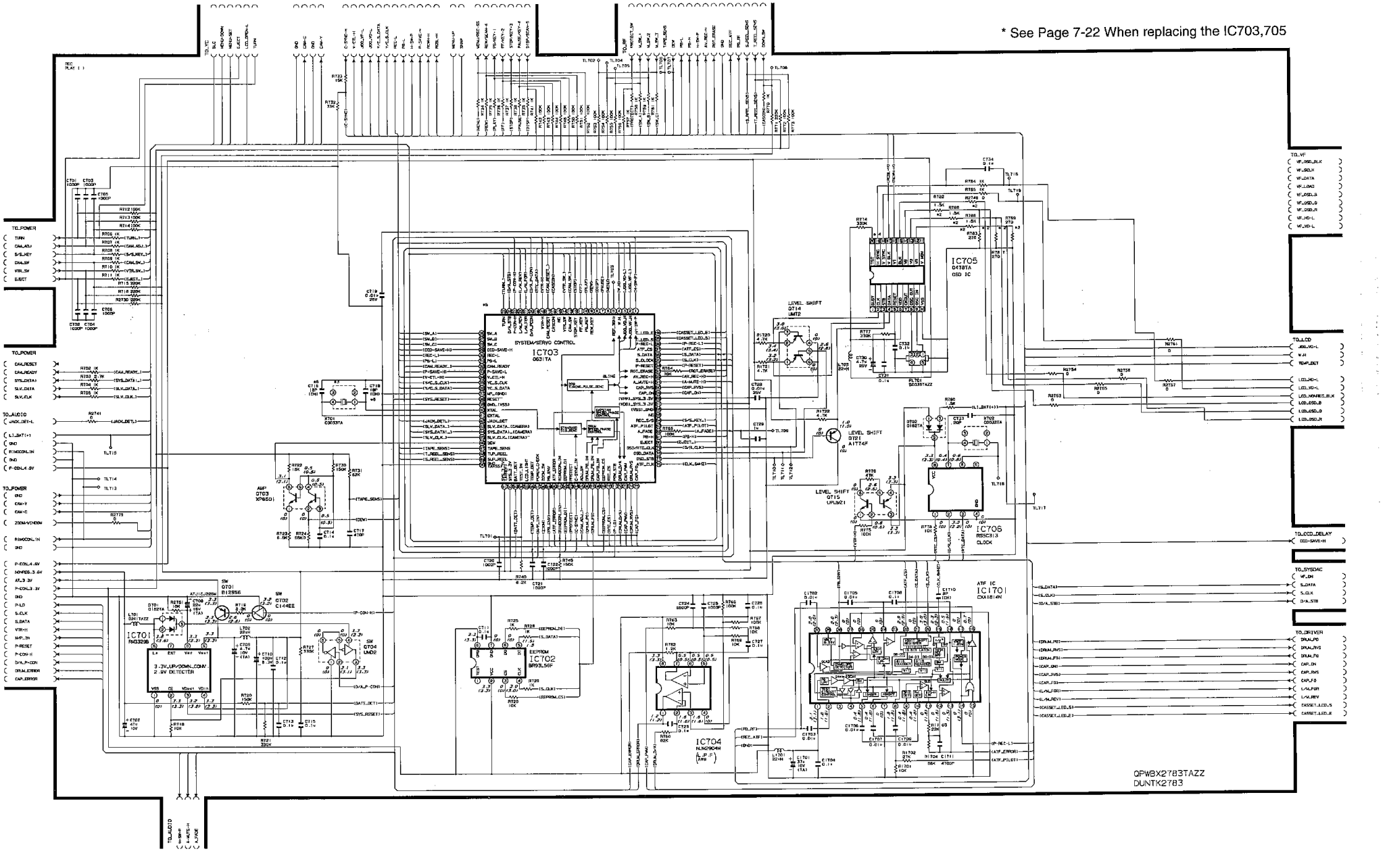
7-6. RF CIRCUIT SCHEMATIC DIAGRAM



VL-E610S/VL-E610H
VL-E660S/VL-E96E
VL-E98E

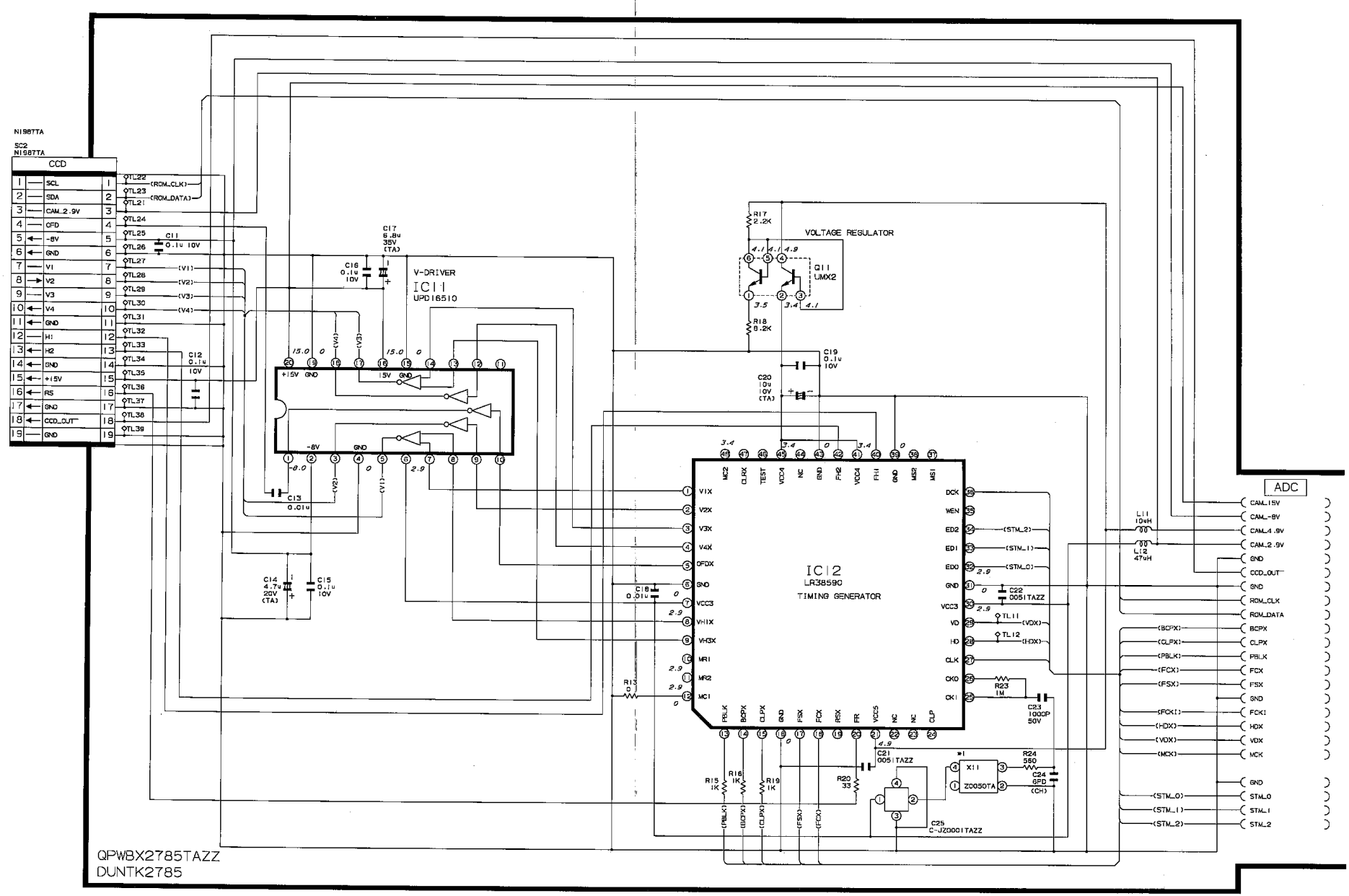
7-7. SYSTEM CONTROL CIRCUIT SCHEMATIC DIAGRAM

* See Page 7-22 When replacing the IC703,705



VL-E610S/VL-E610H
VL-E660S/VL-E96E
VL-E98E

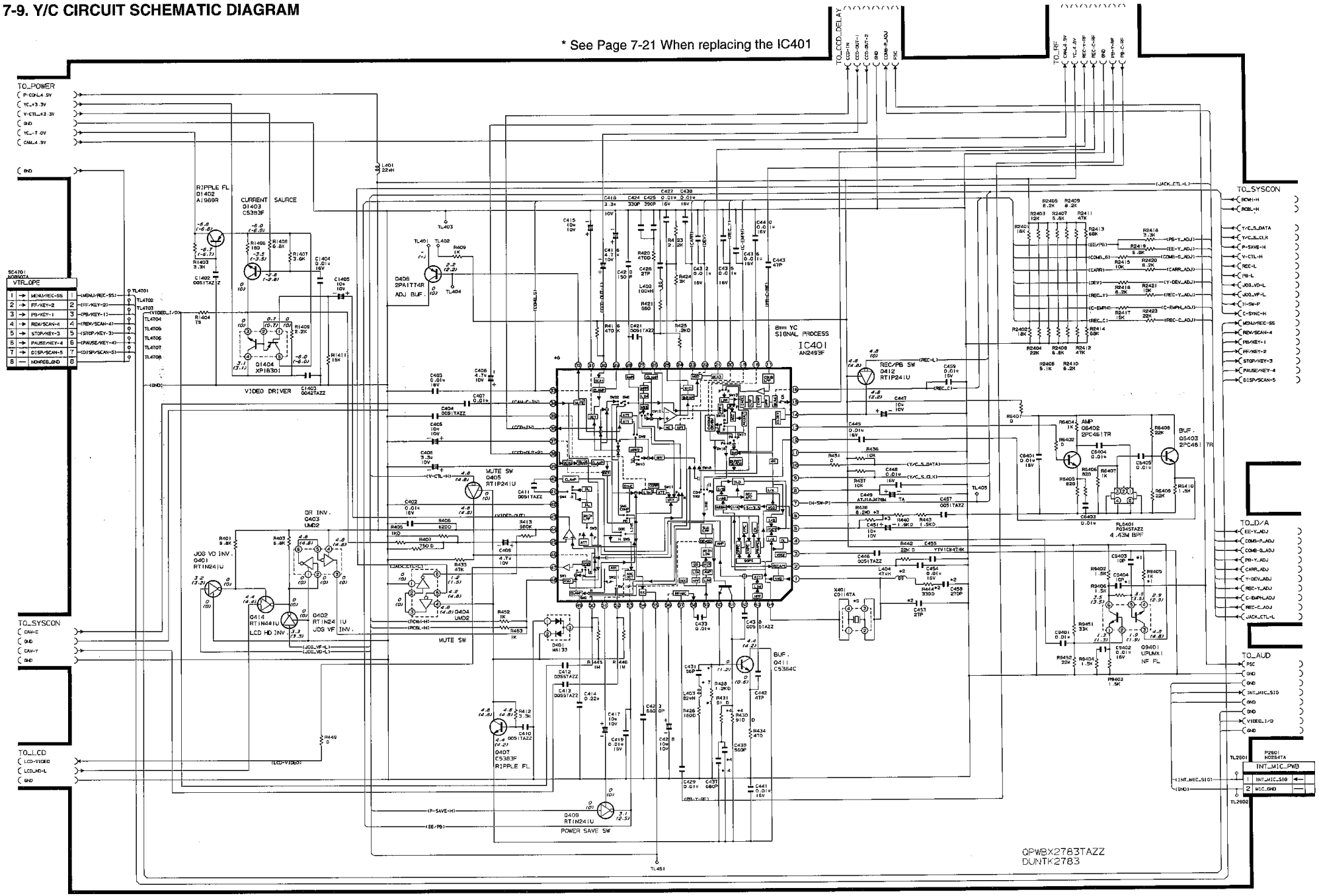
7-8. TG CIRCUIT SCHEMATIC DIAGRAM



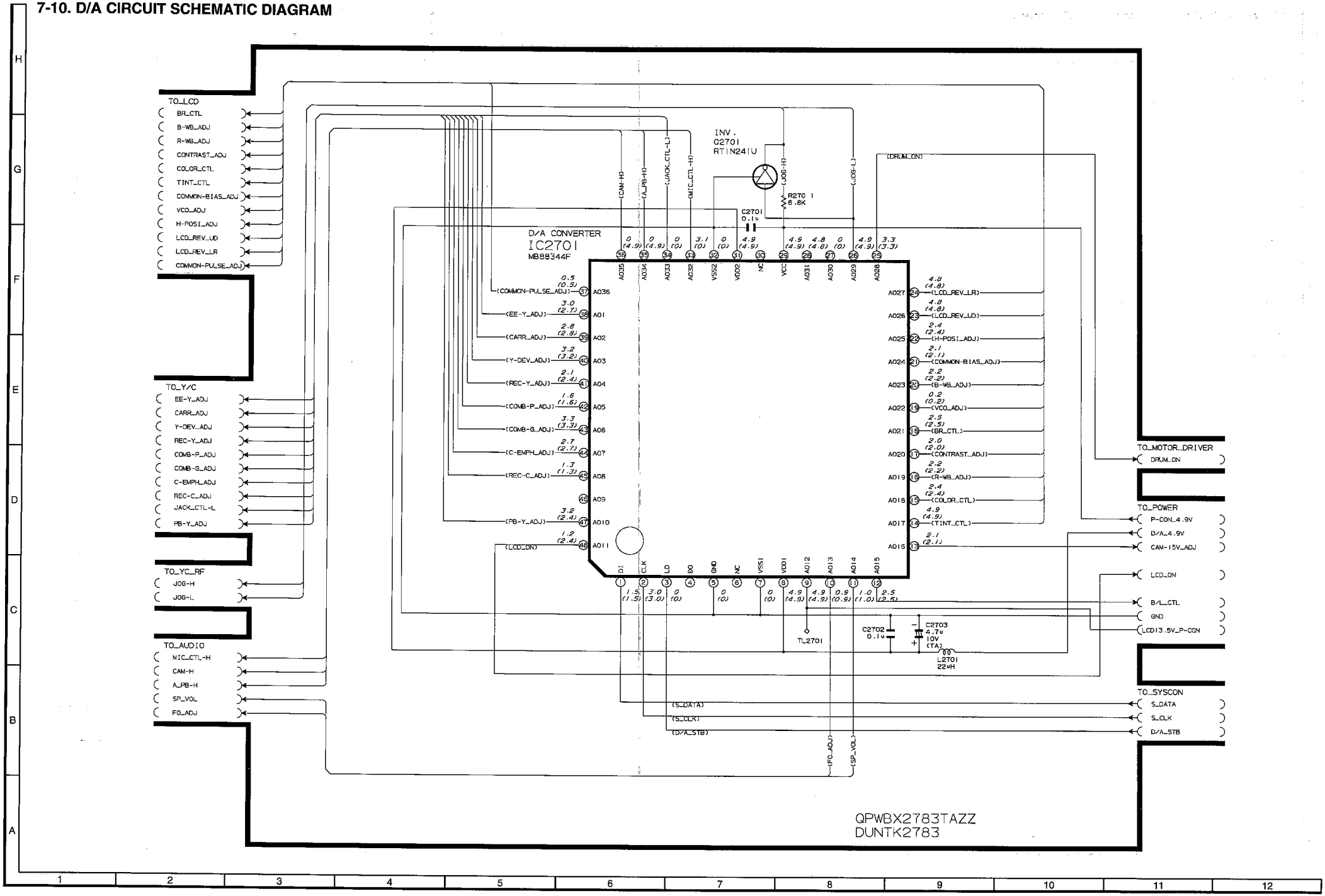
VL-E610S/VL-E610H
VL-E660S/VL-E96E
VL-E98E

7-9. Y/C CIRCUIT SCHEMATIC DIAGRAM

* See Page 7-21 When replacing the IC401

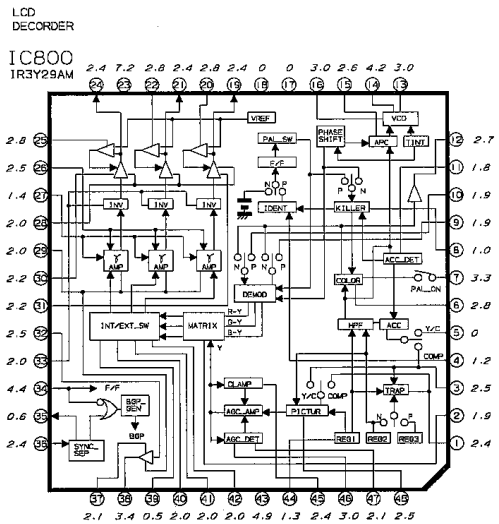


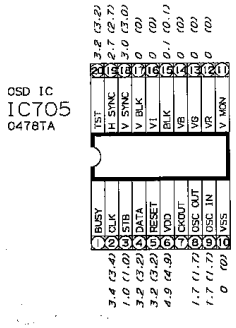
7-10. D/A CIRCUIT SCHEMATIC DIAGRAM

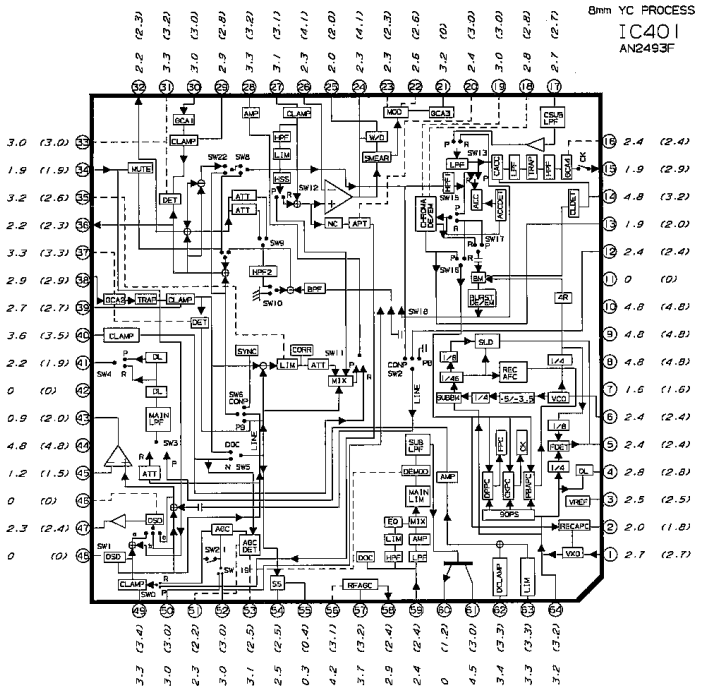


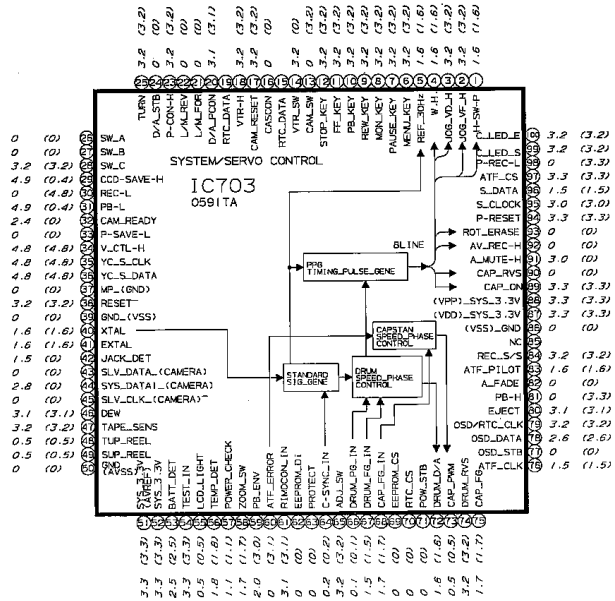
VL-E610S/VL-E610H
VL-E660S/VL-E96E
VL-E98E

7-11. SYSTEM/SERVO CONTROL AND Y/C INTERGRATED CIRCUIT SCHEMATIC DIAGRAM



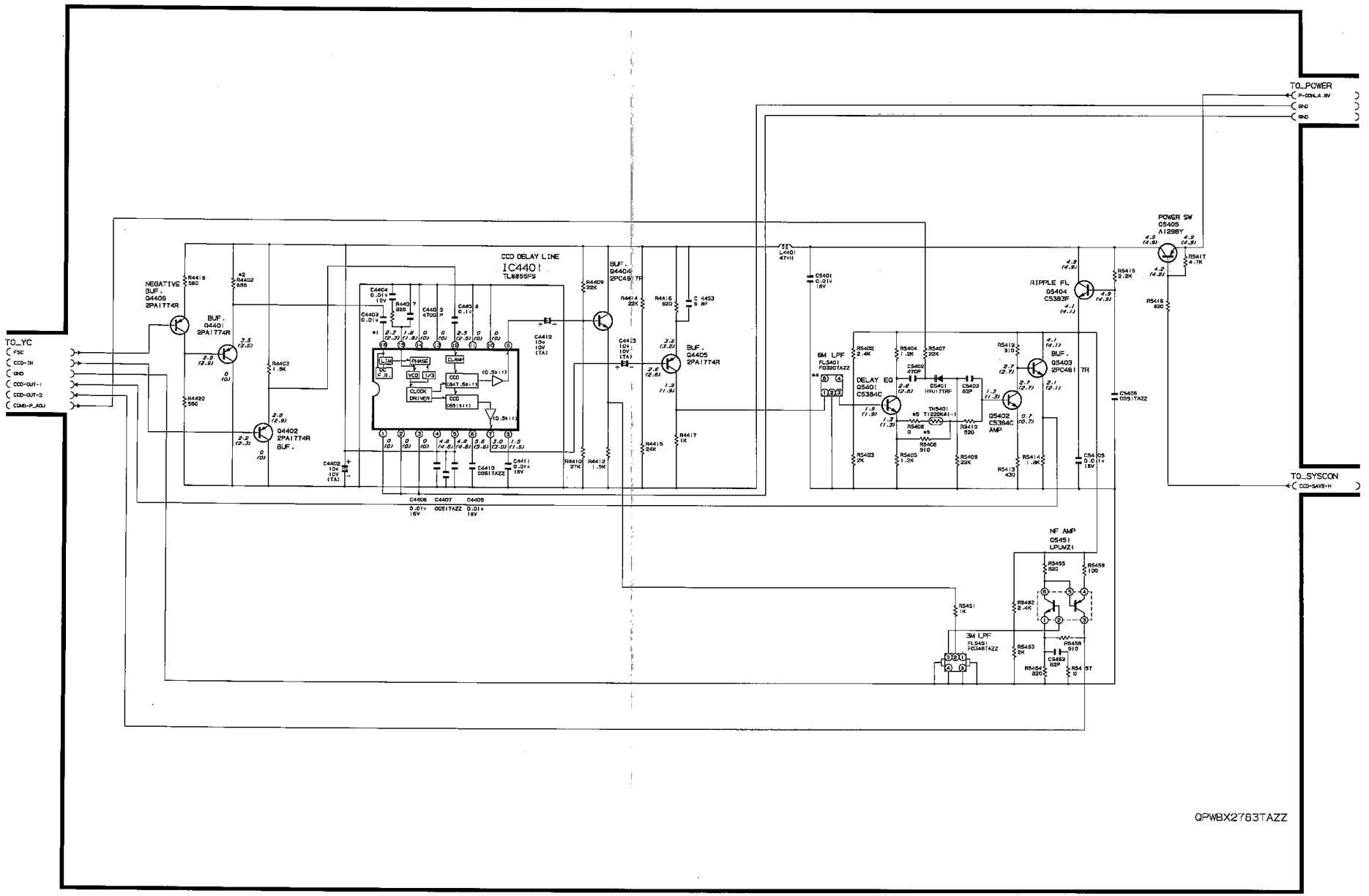






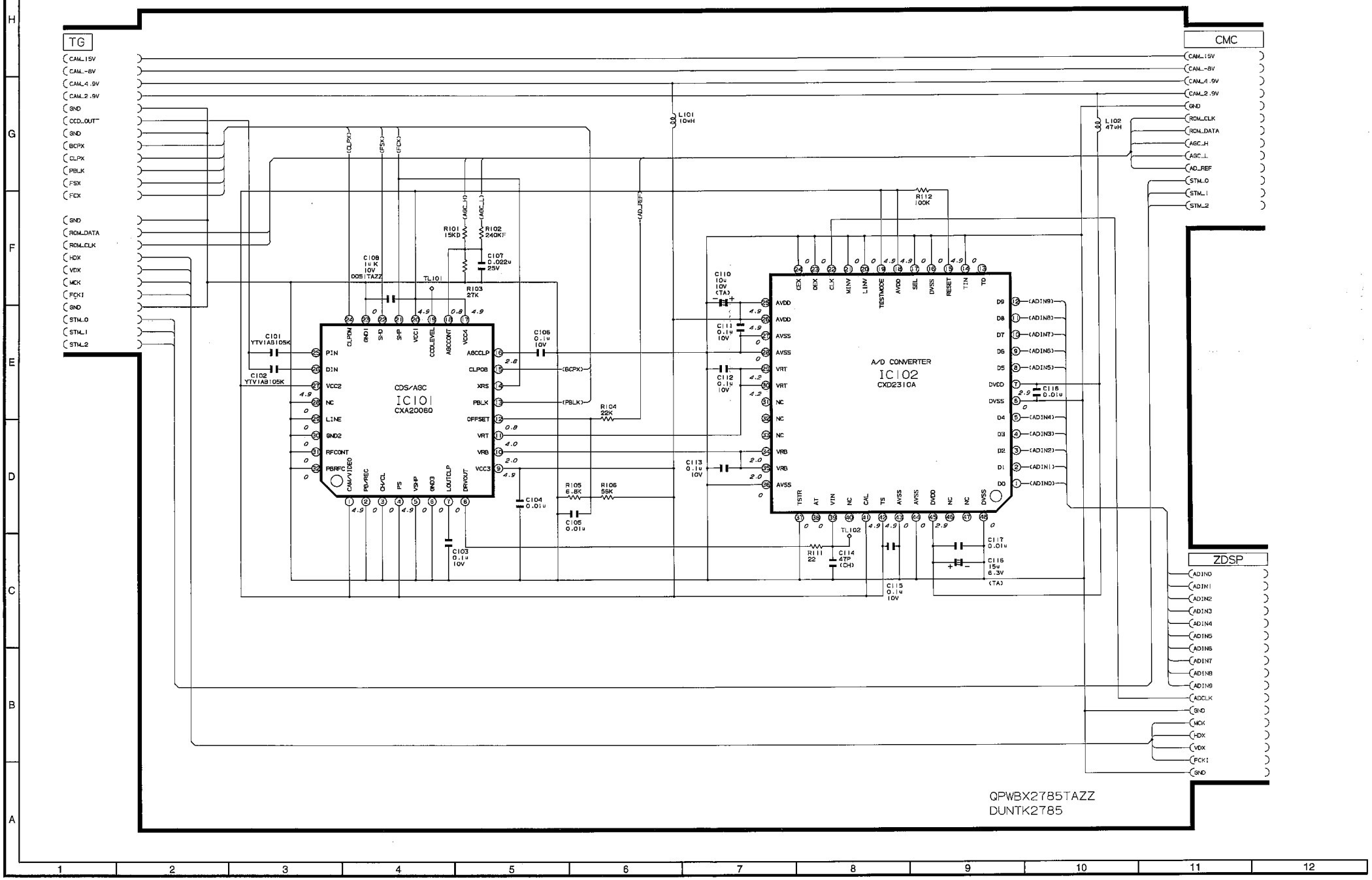
VL-E610S/VL-E610H
VL-E660S/VL-E96E
VL-E98E

7-12. CCD DELAY CIRCUIT SCHEMATIC DIAGRAM



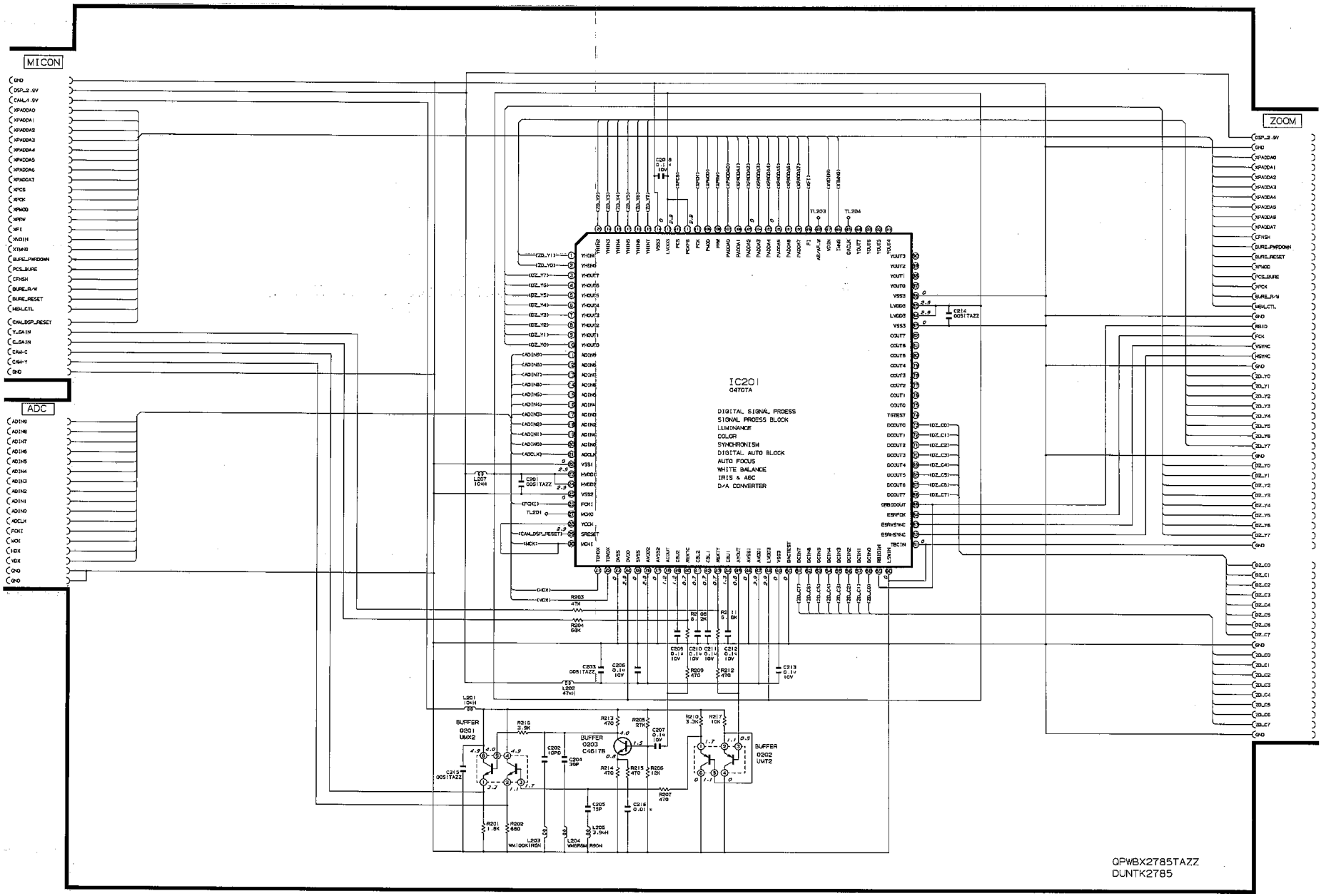
VL-E610S/VL-E610H
VL-E660S/VL-E96E
VL-E98E

7-13. ADC CIRCUIT SCHEMATIC DIAGRAM

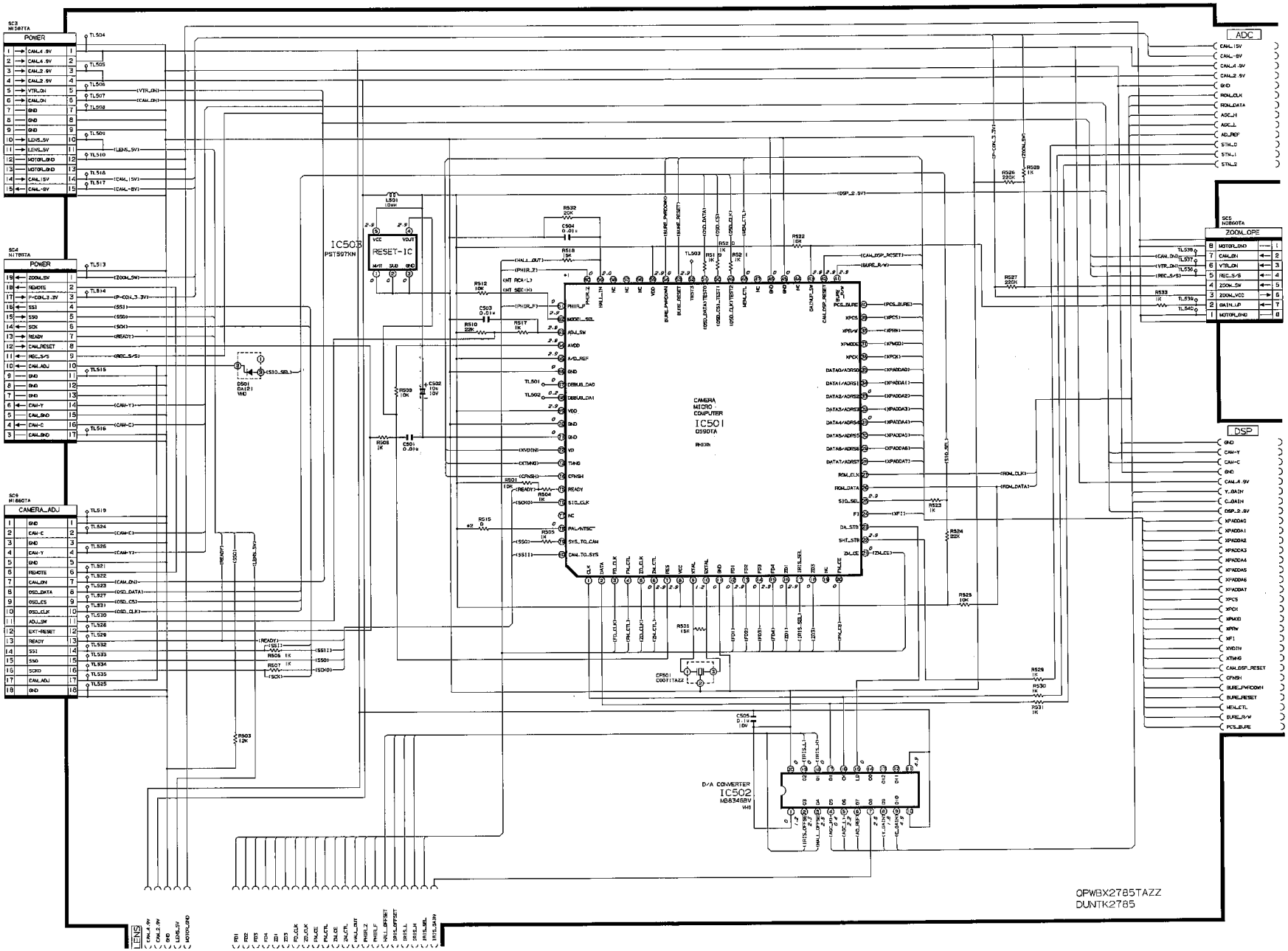


VL-E610S/VL-E610H
VL-E660S/VL-E96E
VL-E98E

7-14. DSP CIRCUIT SCHEMATIC DIAGRAM

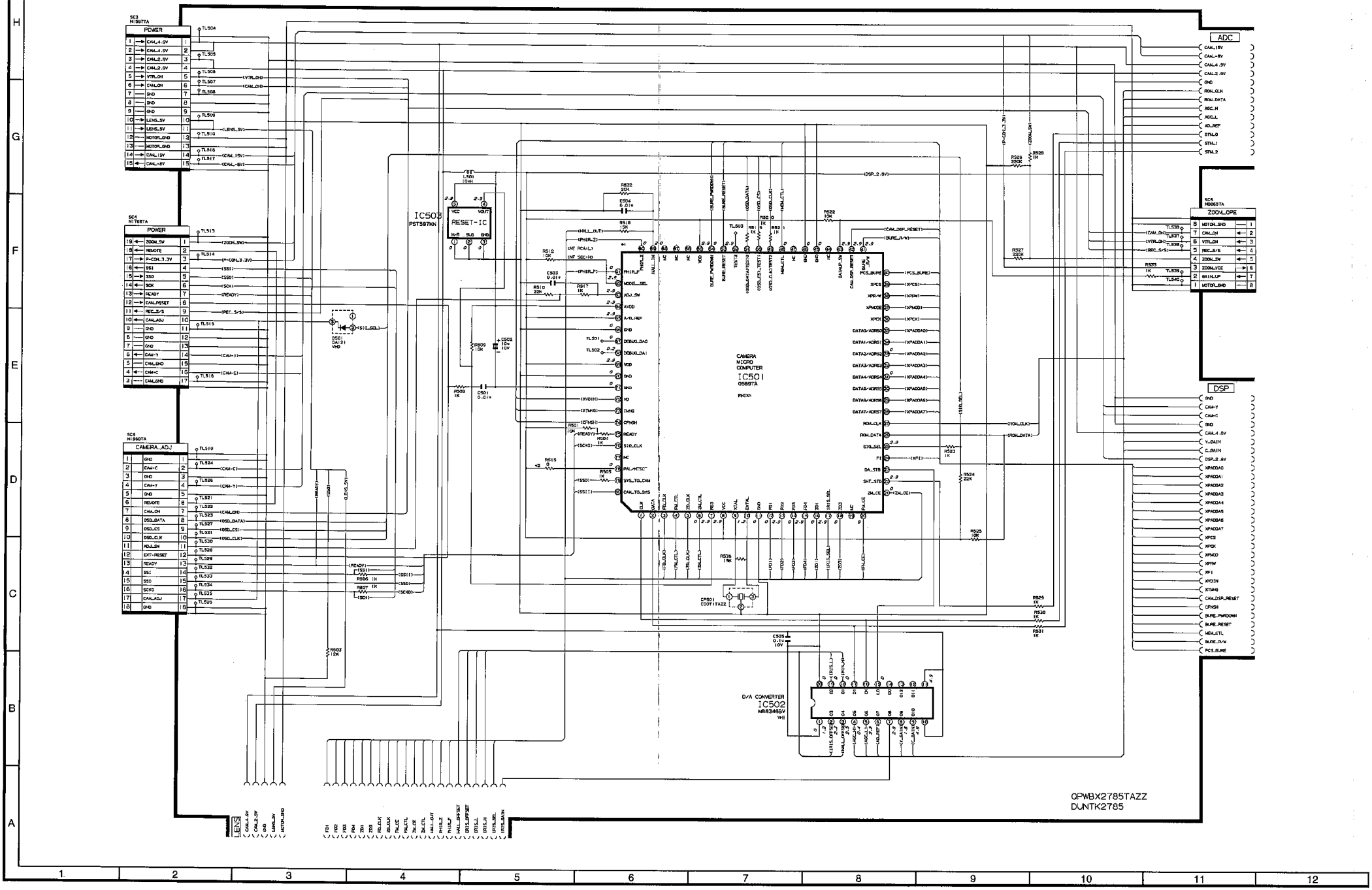


7-15. CAM µ-COM CIRCUIT SCHEMATIC DIAGRAM (VL-E610S/E610H/E96E)

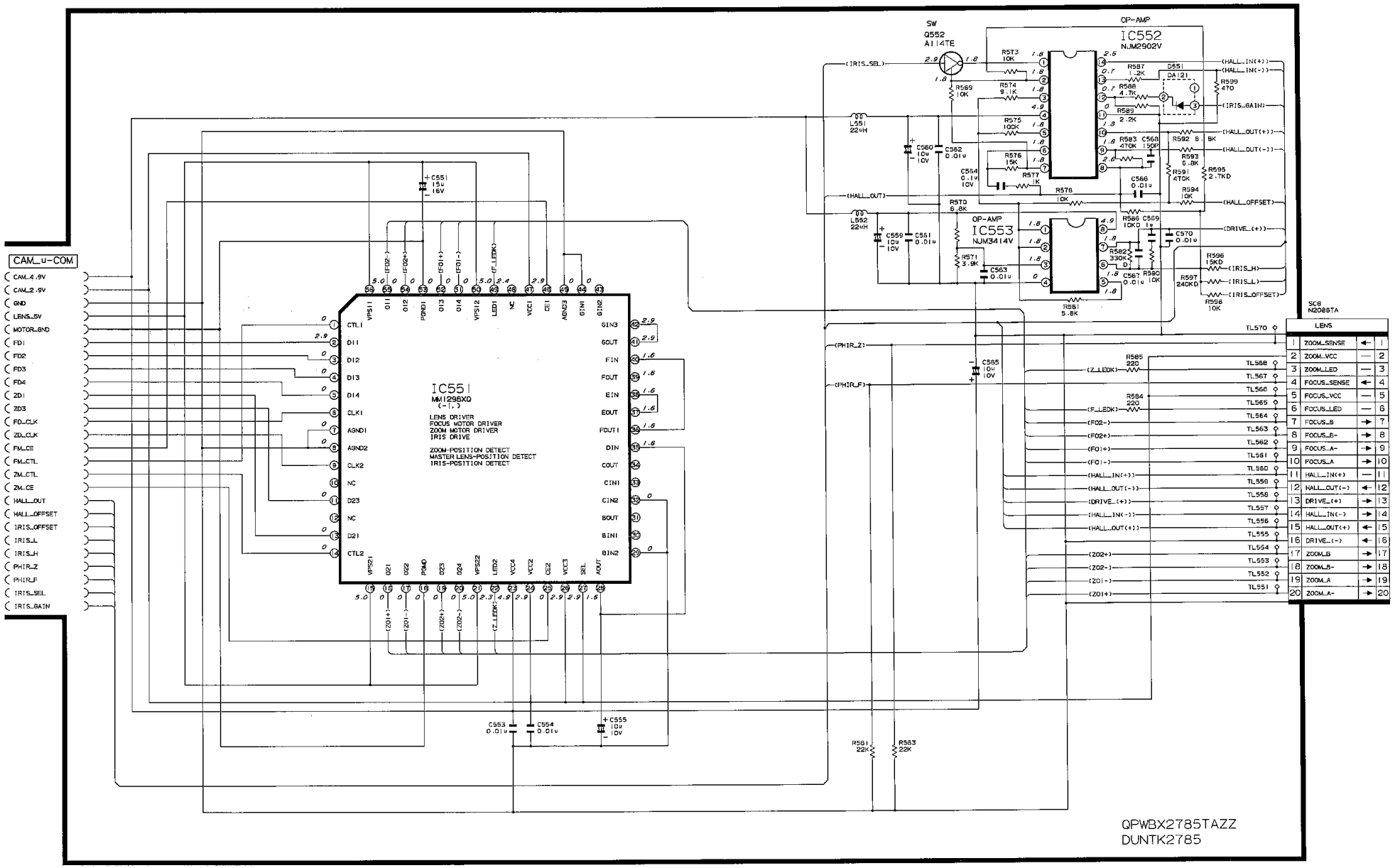


VL-E610S/VL-E610H
VL-E660S/VL-E96E
VL-E98E

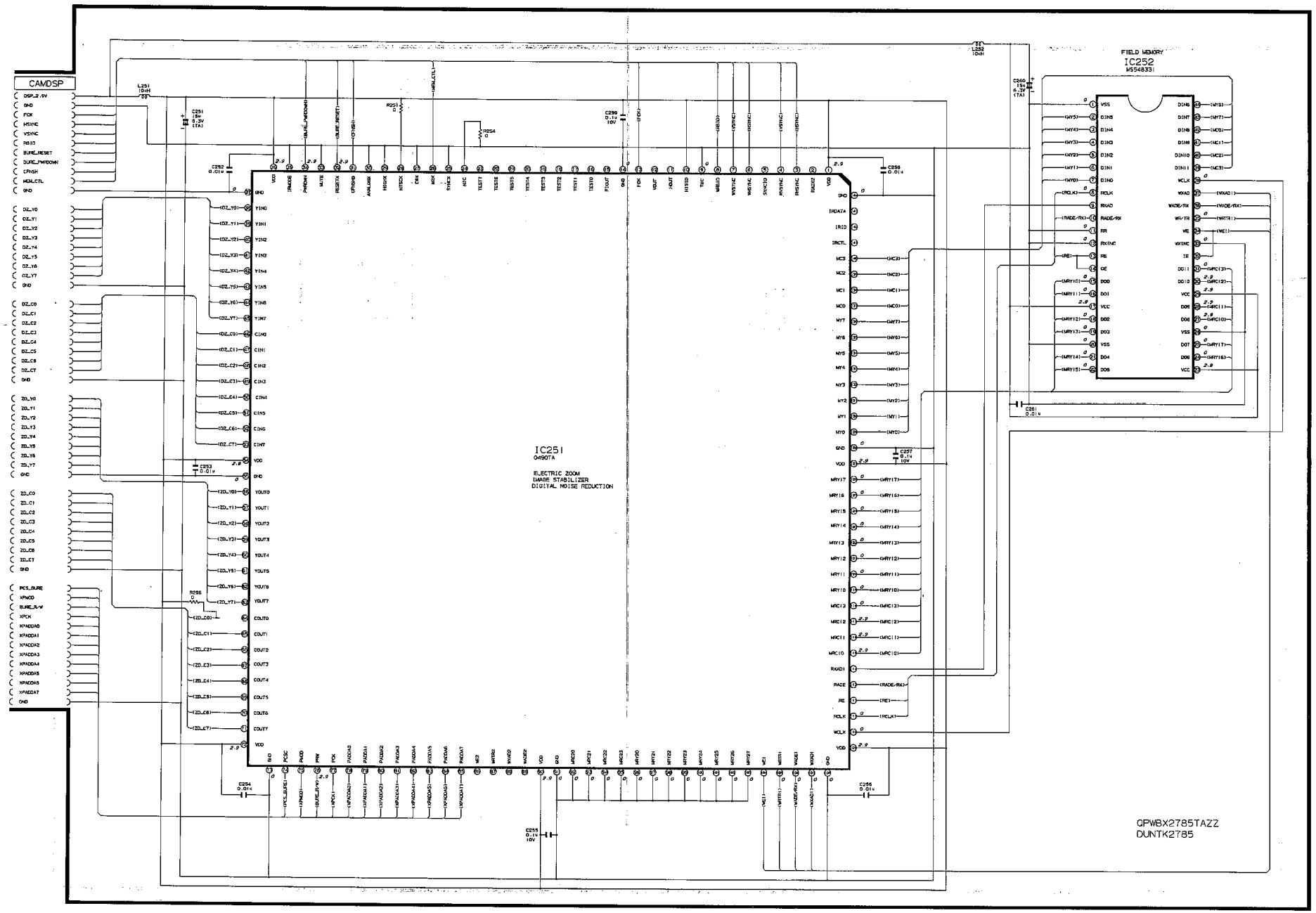
7-15. CAM µ-COM CIRCUIT SCHEMATIC DIAGRAM (VL-E660S/E98E)



7-16. LENS DRIVE CIRCUIT SCHEMATIC DIAGRAM

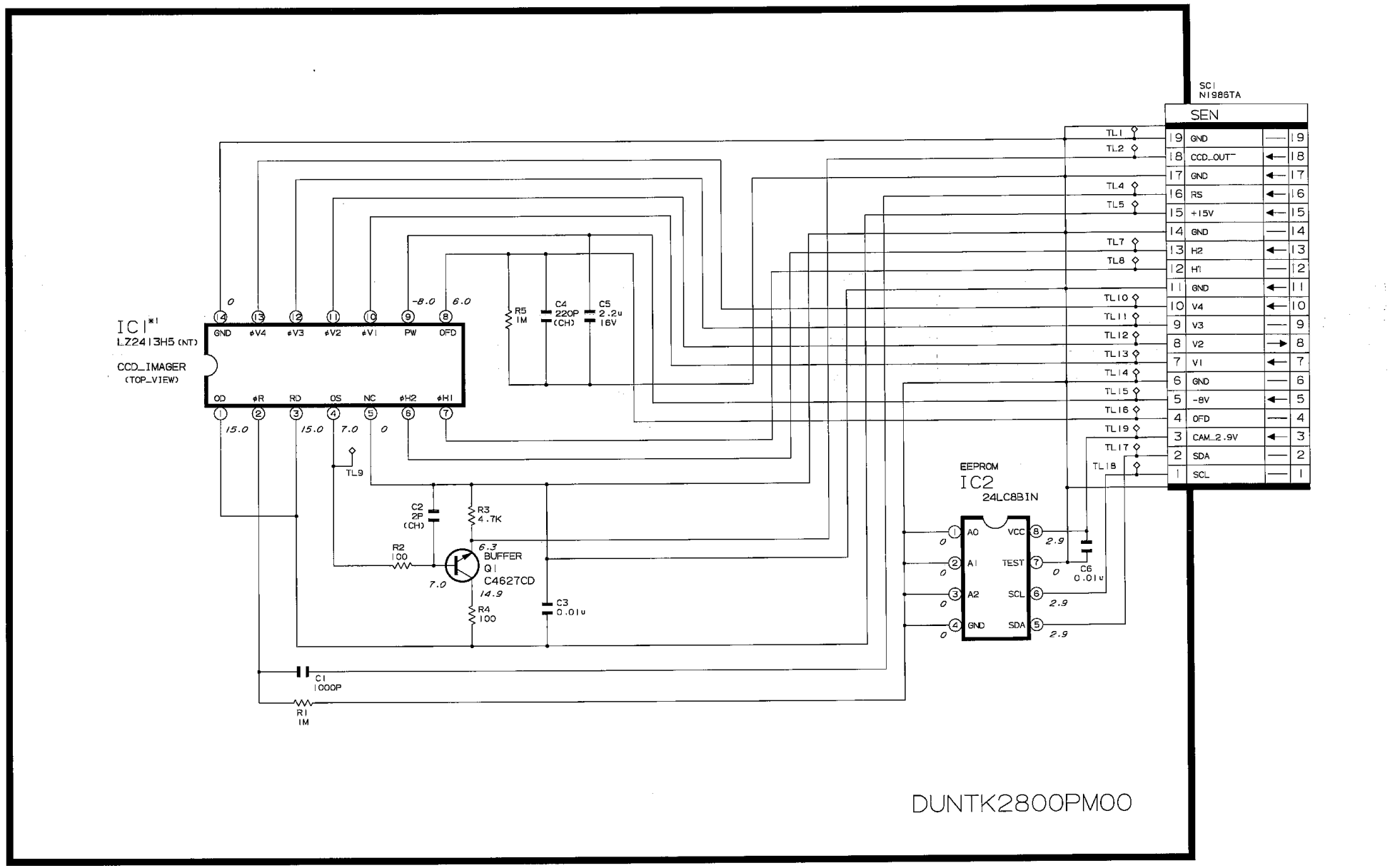


7-17. ZOOM CIRCUIT SCHEMATIC DIAGRAM



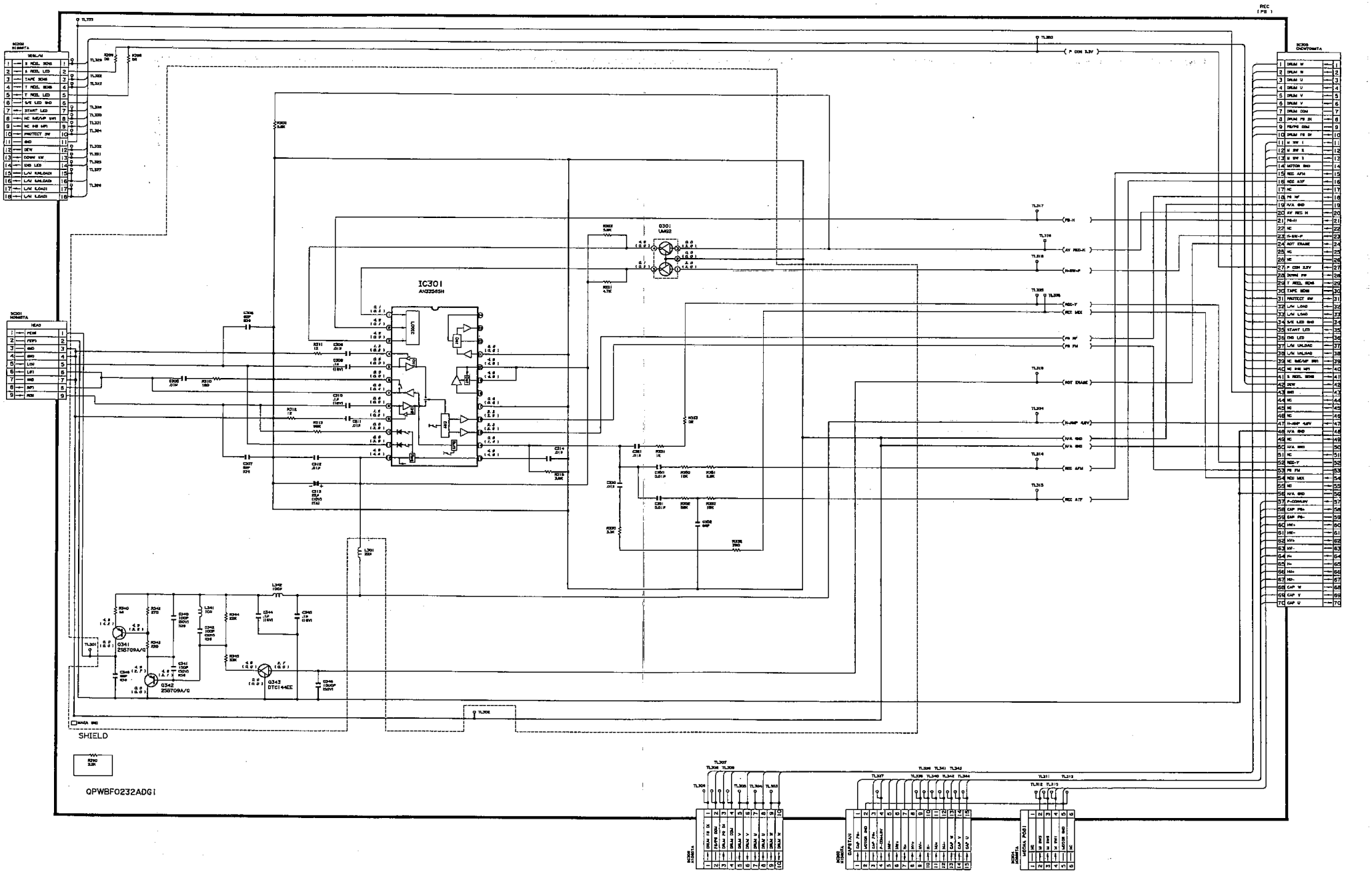
VL-E610S/VL-E610H
VL-E660S/VL-E96E
VL-E98E

7-18. CCD CIRCUIT SCHEMATIC DIAGRAM



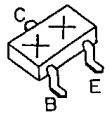
VL-E610S/VL-E610H
VL-E660S/VL-E96E
VL-E98E

7-19. HEAD AMP CIRCUIT SCHEMATIC DIAGRAM



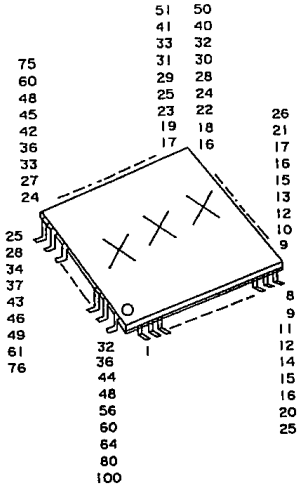
VL-E610S/VL-E610H
VL-E660S/VL-E96E
VL-E98E

8. SEMICONDUCTOR LEAD IDENTIFICATION



2SA1298Y
2SA1774F
2SA1832Y
2SB12956
2SC4555
2SC4738
2SC3931C
2SD2216
DTA144EE
2SC4627C
2SC4617B
2PA1774R
2PC4617R
2SA1989R
2SC5384C
2SC5383F

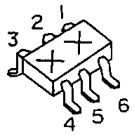
DTC144EE
DTC323TK
RN2104
2SD1328-S
2SA1037KQ
DTA114EE
UN9213
UN9113
DTC123EE
UN9110
DTA114TE
RT1N141U
RT1N241U
RT1N441U
RTNR141U
RTNP241U
RTNP441U



MB3785V
IX0323TA
IX0437TA
IR3Y29AM

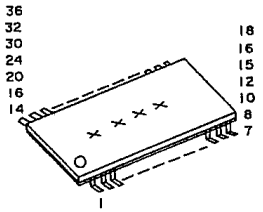
LZ95NA1
AN2493F
LA7456W
IX0452TA
BA9732KV
LR38519

CXD2310A
CXA2006Q
MM1298XQ



UMD2
UMT2
UMX2
UMZ1
XP4111

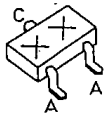
XP4113
XP4213
XP4601
XP6501
UMH2
UPUMZ1



IX0238TA
LB1951V
M62352GP
MC14053V
MB3775FV
TL8856FS

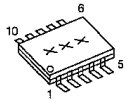
AN3358SH
MB8346BV
UPD16510
LB1850V
NJU4066V
LB1843V

LB1882V
CXA1814N
NJM2902V

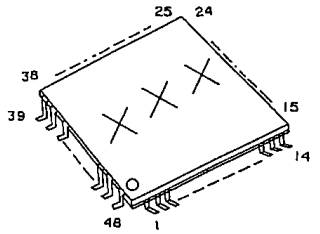


DAN222

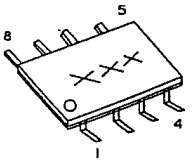
MA132WK



LB1683M



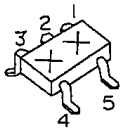
M52369FP



BA7655AF
ST93C46T
NJM4565V
NJM3414V

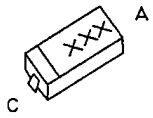
NJM4558M
NJM2904M
RM3329B

TDA7052A
NJM2233V
NJM4565V

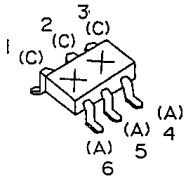


UMG2
S8435CF
XP1501
NJM2107F
SC14S66F
SC7S08F
UMC5
XP1B301
XP1C301
XP1401

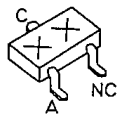
2SB1121T
2SB1132Q
2SB1302S
2SB1123T
SB20W03P
2SK2316



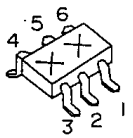
SFPB54
HVU17TRF
EX0870CE
HVU359TR



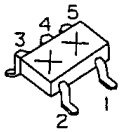
FC903
IMN10



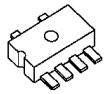
DA121
MA132K
EX0152TA



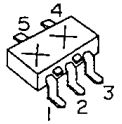
RN4604
XN4402
XN4504
XN6401



FMY1

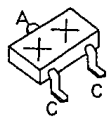


FX803

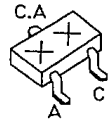


FP301

MPL1



MA132WA
DX0182TA



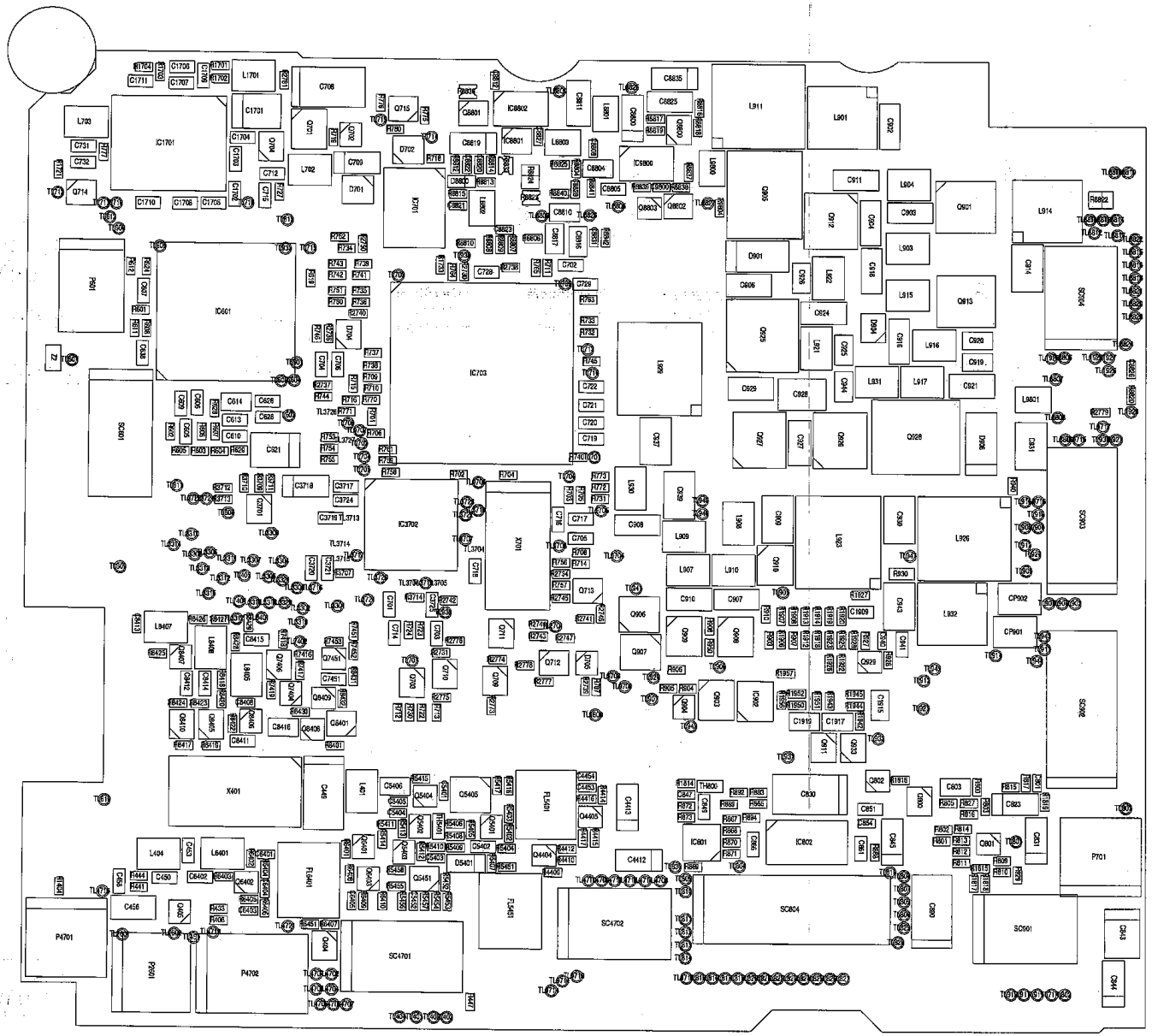
MA133
MA147

VL-E610S/VL-E610H
VL-E660S/VL-E96E
VL-E98E

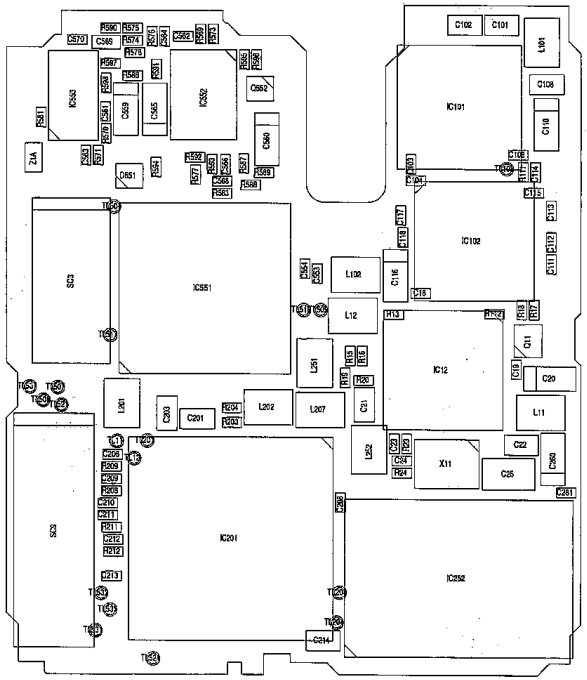
9. PRINTED WIRING BOARD ASSEMBLIES

9-1. P.W.B. Component Side SIDE A

MAIN P.W.B.



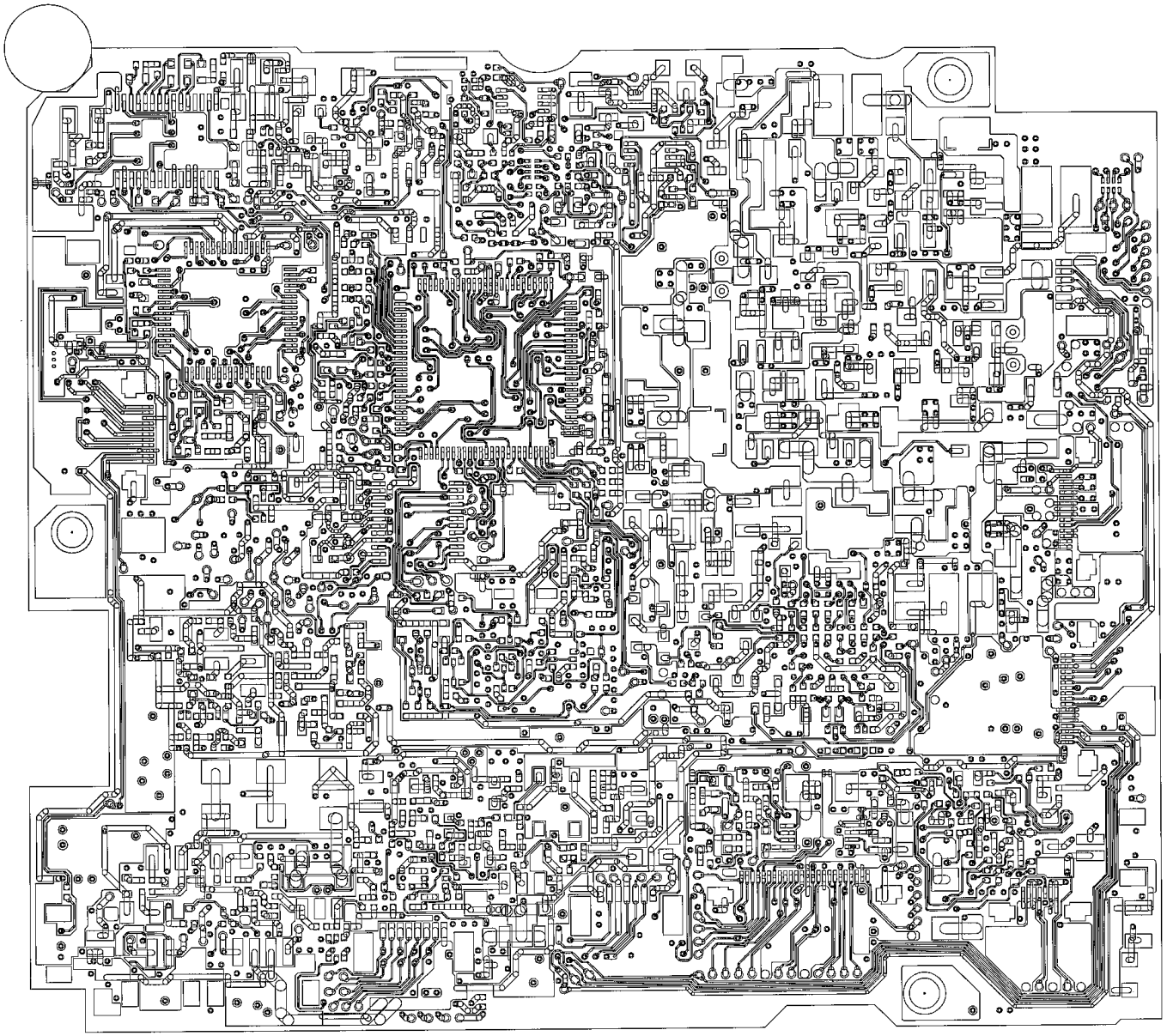
CAMERA P.W.B.



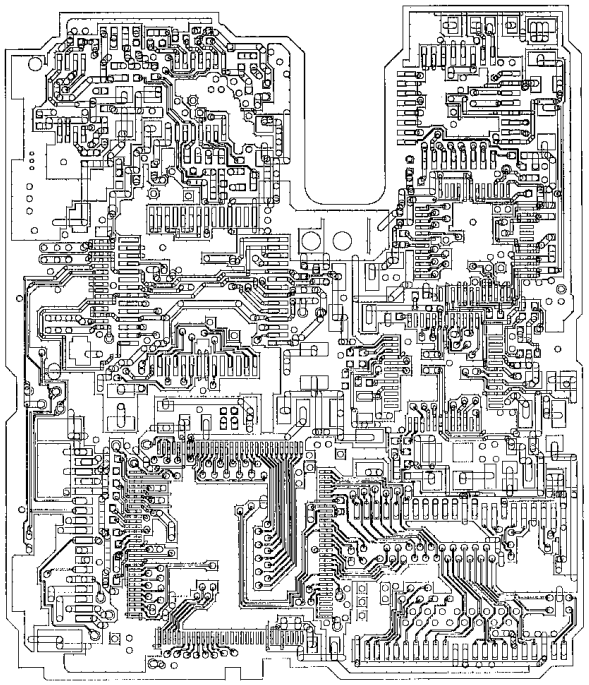
VL-E610S/VL-E610H
VL-E660S/VL-E96E
VL-E98E

9-2. P.W.B. Wiring Side SIDE A

MAIN P.W.B.



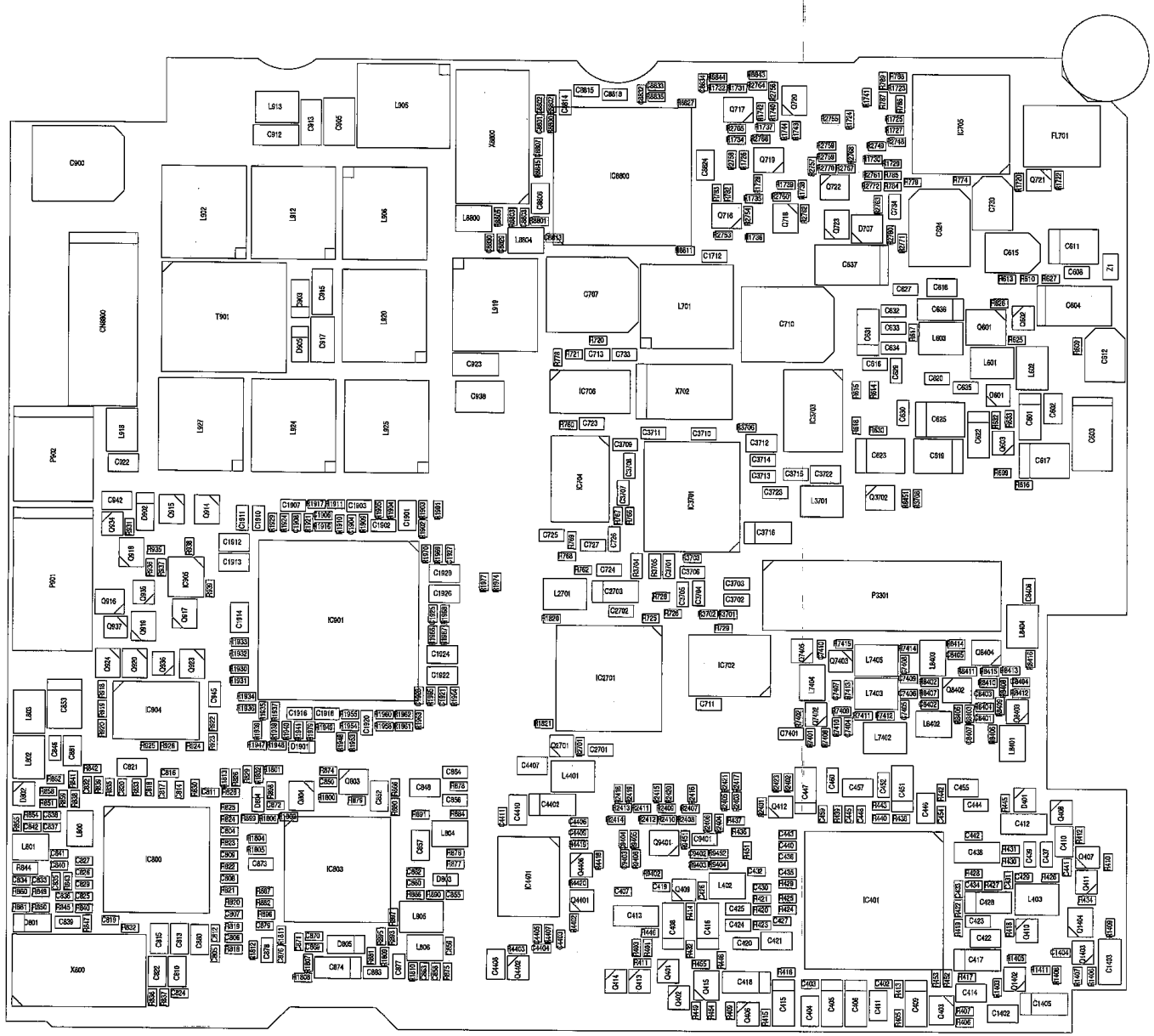
CAMERA P.W.B.



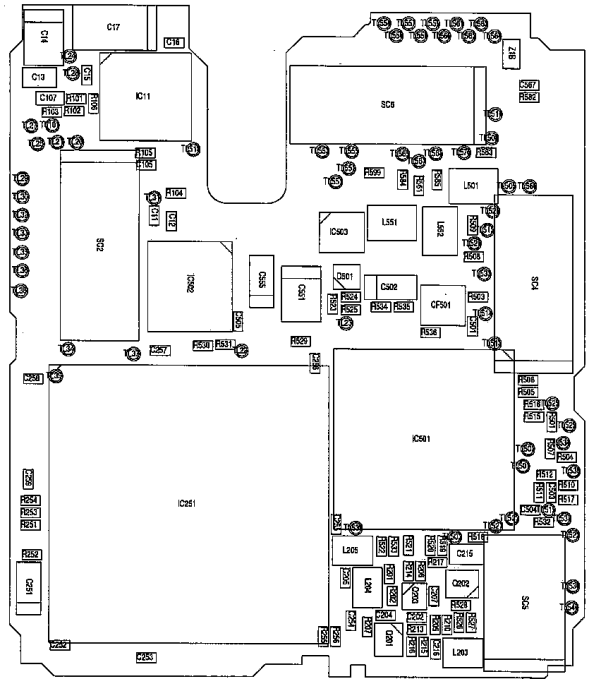
VL-E610S/VL-E610H
VL-E660S/VL-E96E
VL-E98E

9-3. P.W.B. Component Side SIDE B

MAIN P.W.B.



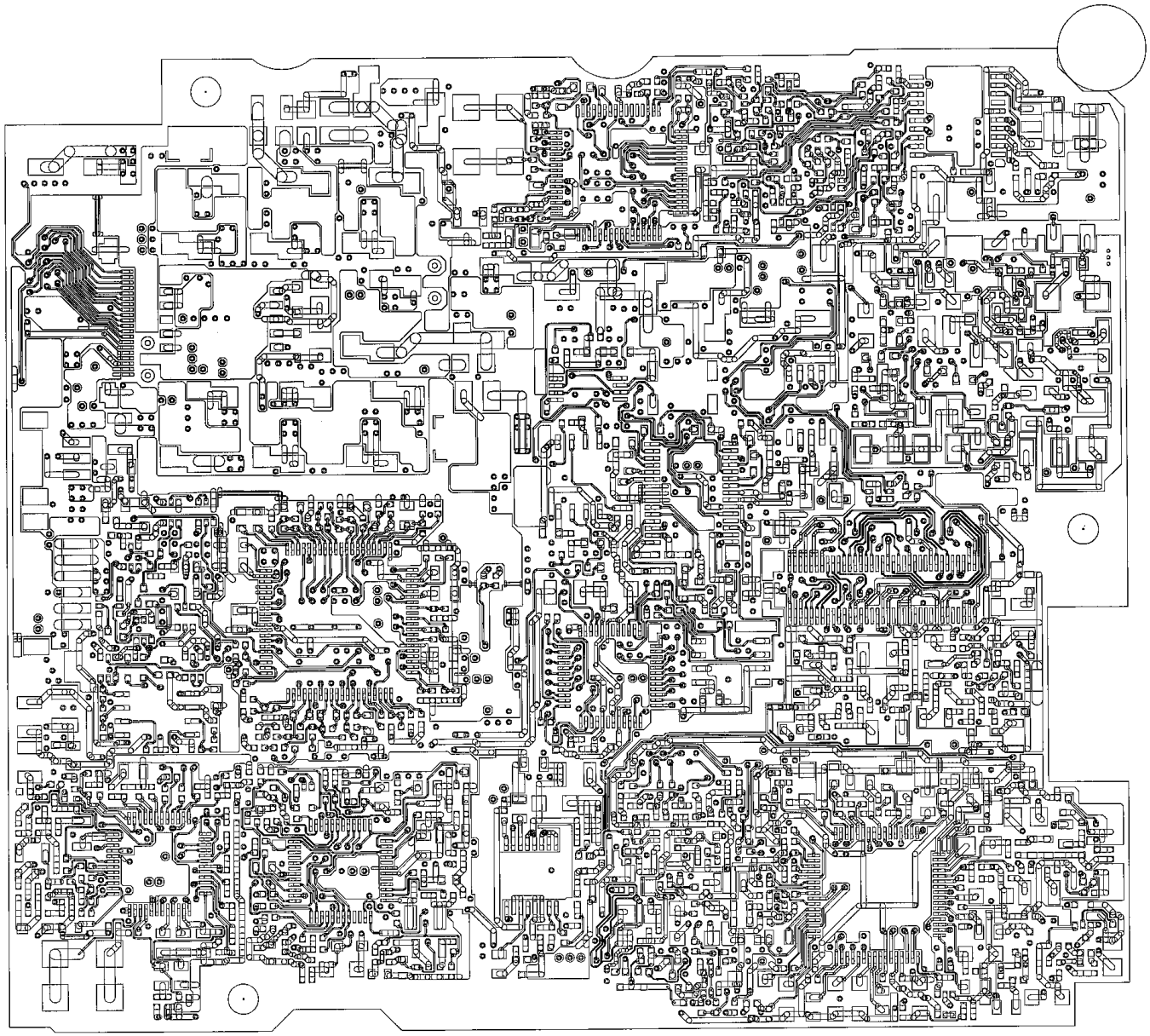
CAMERA P.W.B.



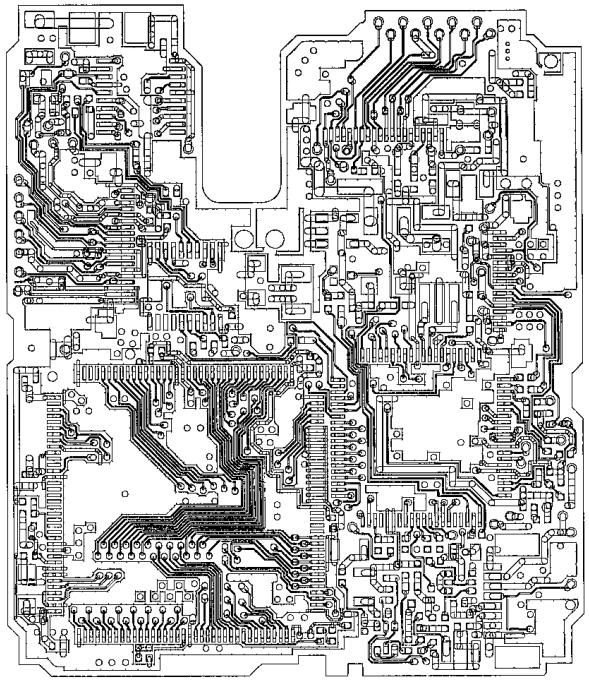
VL-E610S/VL-E610H
VL-E660S/VL-E96E
VL-E98E

9-4. P.W.B. Wiring Side SIDE B

MAIN P.W.B.

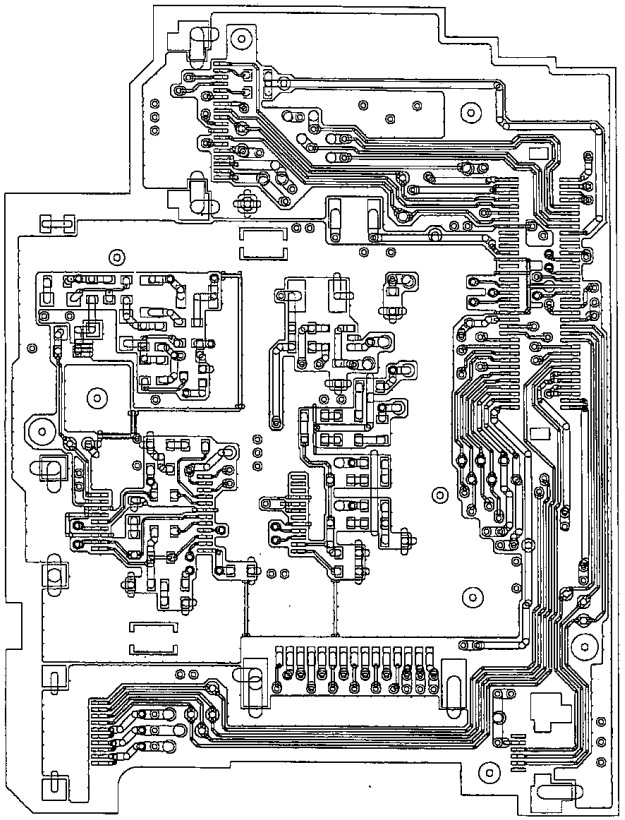


CAMERA P.W.B.

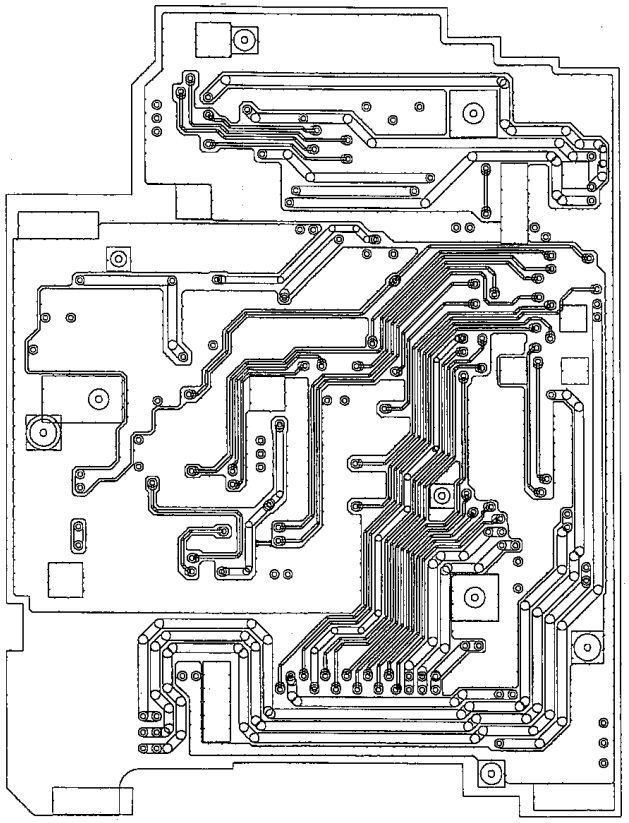


9-5. HEAD AMP P.W.B.

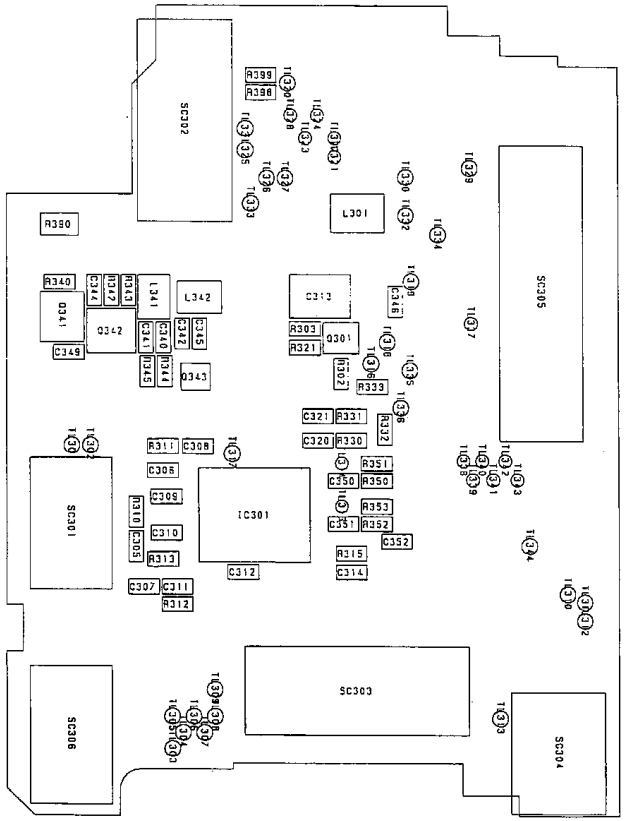
Wiring Side SIDE A



Wiring Side SIDE B



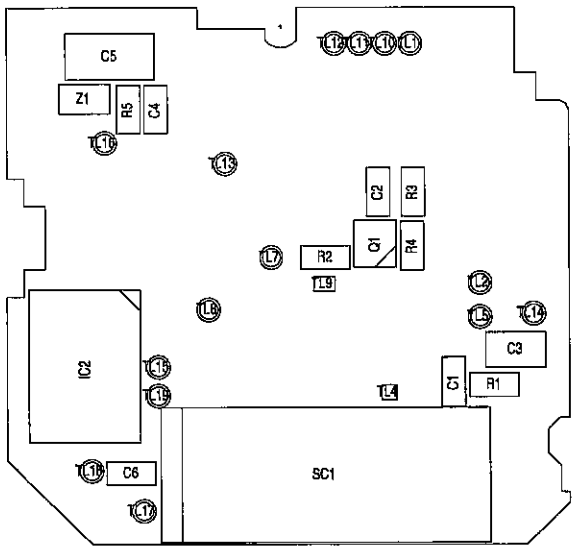
Component Side SIDE B

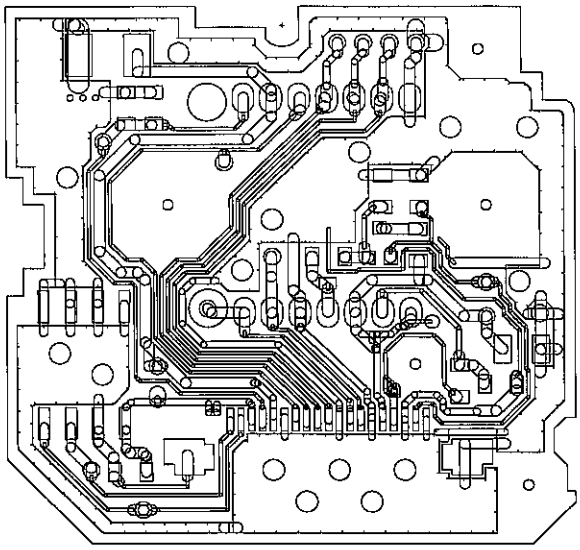


9-6. CCD P.W.B.

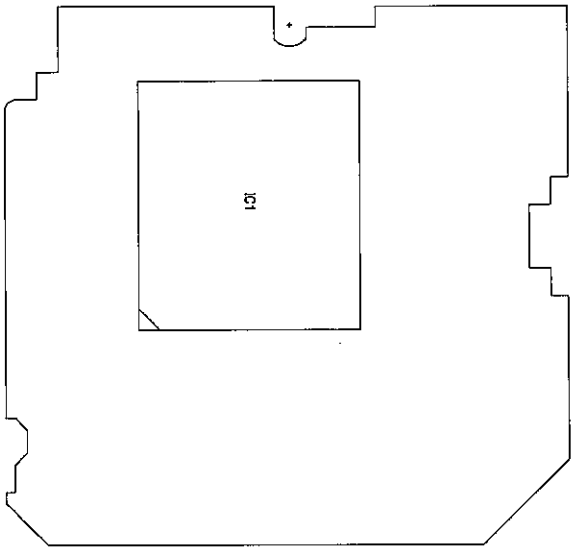
Component Side **Wiring Side**

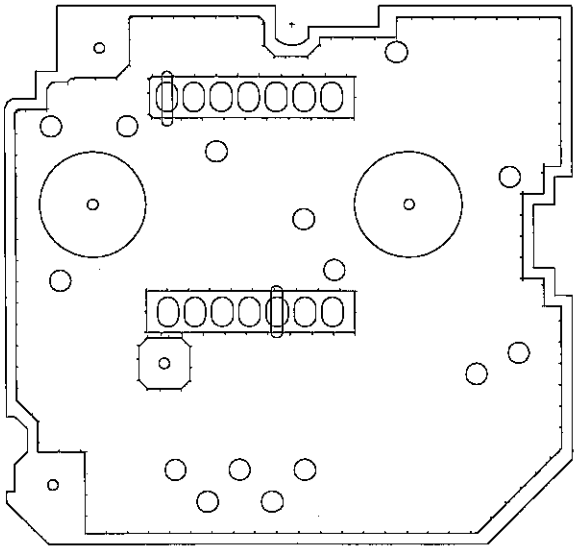
SIDE A





SIDE B





10. REPLACEMENT PARTS LIST/ EXPLODED VIEWS

ELECTRICAL PARTS LIST

Parts marked with "⚠" are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

"HOW TO ORDER REPLACEMENT PARTS"

★MARK : SPARE PARTS-DELIVERY SECTION:ALL JAPAN

To have your order filled promptly and correctly, please furnish the following informations.

1. MODEL NUMBER
2. REF. NO.
3. PART NO.
4. DESCRIPTION
5. PRICE CODE

⚠ MARK: SAFETY RELATED PARTS

PWB ASSEMBLY IS NOT REPLACEMENT ITEM

Ref. No.	Part No.	★	Description	Code

PRINTED WIRING BOARD ASSEMBLIES

(NOT REPLACEMENT ITEM)

	DUNTK2783QA00	VCR Unit(VL-E610S)	—
	DUNTK2783QA01	VCR Unit(VL-E610H)	—
	DUNTK2783QA02	VCR Unit(VL-E96E)	—
	DUNTK2783QA03	VCR Unit(VL-E660S)	—
	DUNTK2783QA05	VCR Unit(VL-E98E)	—
	DUNTK2785QA03	CAMERA Unit (VL-E610S/E610H)	—
	DUNTK2785QA04	CAMERA Unit(VL-E96E)	—
	DUNTK2785QA05	CAMERA Unit(VL-E660S)	—
	DUNTK2785QA06	CAMERA Unit(VL-E98E)	—
	RAMP-0017TAN1	Head AMP Unit	—
	DUNTK2800PM00	CCD Unit	—

DUNTK2783QA00 VCR UNIT(VL-E610S)
DUNTK2783QA01 VCR UNIT(VL-E610H)
DUNTK2783QA02 VCR UNIT(VL-E96E)
DUNTK2783QA03 VCR UNIT(VL-E660S)
DUNTK2783QA05 VCR UNIT(VL-E98E)

INTEGRATED CIRCUITS

⚠	CP901	VHiCCP2E50/-1	I.C.	AD
⚠	CP902	VHiCCP2E50/-1	I.C.	AD
	IC401	VHiAN2493F/-1	AN2493FH	AW
	IC601	VHiLA7458W/-1	LA7458W	AT
	IC701	VHiRM3329B/-1	RS5RM3329B-T2	AL
	IC702	VHiBR93L56F-1	BR93LC56F-E2	AM
	IC703	RH-iX0631TAZZ	CXP87460-129R	AY
	IC704	VHiNJM2904M-1	NJM2904M	AE
	IC705	RH-iX0478TAZZ	IX0478TA-E2	AR
	IC706	VHiRS5C313/-1	RS5C313-E2	AL
	IC800	VHiiR3Y29AM-1	IR3Y29AM	AV
	IC801	VHiNJM2107F-1	NJM2107F	AE
	IC802	VHiNJM4565V-1	NJM4565V	AF
	IC803	VHiLZ95NA1/-1	LZ95NA1	AR
	IC901	RH-iX0325TAZZ	MB4484PFV-G	AY
	IC902	VHiTA75S01F-1	TA75S01F	AD
	IC904	VHiNJM2904M-1	NJM2904M	AE
	IC1701	VHiCXA1814N-1	CXA1814N/-T4	AQ
	IC2701	VHiMB88344F-1	MB88344PFV	AV
	IC3701	VHiLB1950V/-1	LB1950V-TRM	AQ
	IC3702	VHiLB1951V/-1	LB1951V-TRM	AN
	IC3703	VHiLB1638M/-1	LB1638M-TE-R	AK
	IC4401	VHiTL8855FS-1	TL8855FS	AL

TRANSISTORS

Q401	VSRT1N241U/-1	Transistor	AB
Q402	VSRT1N241U/-1	Transistor	AB
Q403	VSUMD2/////-1	Transistor	AC
Q404	VSUMD2/////-1	Transistor	AC
Q405	VSRT1P241U/-1	Transistor	AB
Q406	VS2PA1774R/-1	Transistor	AB
Q407	VS2SC5383F/-1	Transistor	AB
Q409	VSRT1N241U/-1	Transistor	AB
Q411	VS2SC5384C/-1	Transistor	AB
Q412	VSRT1P241U/-1	Transistor	AB
Q414	VSRT1N441U/-1	Transistor	AB
Q601	VS2SA1298Y/-1	Transistor	AB
Q602	VSRT1N441U/-1	Transistor	AB
Q603	VS2SC4738Y/-1	Transistor	AA
Q701	VS2SB12956/-1	Transistor	AB
Q702	VSDTC144EE/-1	Transistor	AA
Q703	VSXP6501///-1	Transistor	AB
Q704	VSUMD2/////-1	Transistor	AC
Q714	VSUMT2/////-1	Transistor	AB
Q715	VSUPUMZ1///-1	Transistor	AC
Q721	VS2SA1774F/-1	Transistor	AA
Q800	VSUMA2/////-1	Transistor	AB
Q803	VSUPUMZ1///-1	Transistor	AC
Q804	VSUMG2/////-1	Transistor	AC
Q901	VSFP301////-1	Transistor	AD
Q903	VS2SB12956/-1	Transistor	AB
Q905	VSFZT1048A/-1	Transistor	AF
Q907	VS2SA1973//-1	Transistor	AD
Q908	VS2SA1973//-1	Transistor	AD
Q909	VS2SA1973//-1	Transistor	AD
Q910	VS2SA1973//-1	Transistor	AD

Ref. No.	Part No.	★	Description	Code
Q911	VSUMA4/////-1		Transistor	AB
Q912	VSMPL1/////-1		Transistor	AE
Q913	VS2SB1123//-1		Transistor	AC
Q914	VSUMD2/////-1		Transistor	AC
Q915	VSUMD2/////-1		Transistor	AC
Q916	VSUMH2/////-1		Transistor	AC
Q917	VSUMD2/////-1		Transistor	AC
Q918	VSUMD2/////-1		Transistor	AC
Q919	VSUMD2/////-1		Transistor	AC
Q920	VSUMG2/////-1		Transistor	AC
Q923	VSUMD2/////-1		Transistor	AC
Q925	VSFX803////-1		Transistor	AG
Q926	VSMPL1/////-1		Transistor	AE
Q927	VSMPL1/////-1		Transistor	AE
Q928	VSFZT1048A/-1		Transistor	AF
Q929	VS2SA1774F/-1		Transistor	AA
Q933	VSUMD2/////-1		Transistor	AC
Q934	VS2SA1774F/-1		Transistor	AA
Q937	VSDTA144EE/-1		Transistor	AA
Q1402	VS2SA1989R/-1		Transistor	AB
Q1403	VS2SC5383F/-1		Transistor	AB
Q1404	VSXP1B301//-1		Transistor	AD
Q2701	VSRT1N241U/-1		Transistor	AB
Q3701	VSUPUMX1///-1		Transistor	AC
Q3702	VSUMB2/////-1		Transistor	AB
Q4401	VS2PA1774R/-1		Transistor	AB
Q4402	VS2PA1774R/-1		Transistor	AB
Q4404	VS2PC4617R/-1		Transistor	AB
Q4405	VS2PA1774R/-1		Transistor	AB
Q4406	VS2PA1774R/-1		Transistor	AB
Q5401	VS2SC5384C/-1		Transistor	AB
Q5402	VS2SC5384C/-1		Transistor	AB
Q5403	VS2PC4617R/-1		Transistor	AB
Q5404	VS2SC5383F/-1		Transistor	AB
Q5405	VS2SA1298Y/-1		Transistor	AB
Q5451	VSUPUMZ1///-1		Transistor	AC
Q6402	VS2PC4617R/-1		Transistor	AB
Q6403	VS2PC4617R/-1		Transistor	AB
Q7402	VS2SA1989R/-1		Transistor	AB
Q7403	VS2SC5384C/-1		Transistor	AB
Q7405	VSRT1P241U/-1		Transistor	AB
Q7406	VSUPUMX1///-1		Transistor	AC
Q8402	VSUPUMX1///-1		Transistor	AC
Q8403	VSRT1N141U/-1		Transistor	AB
Q8404	VSUPUMZ1///-1		Transistor	AC
Q8405	VSUPUMX1///-1		Transistor	AC
Q8406	VSDTC123EE/-1		Transistor	AC
Q8407	VS2SC5383F/-1		Transistor	AB
Q8408	VS2SC5383F/-1		Transistor	AB
Q8409	VS2SA1989R/-1		Transistor	AB
Q8410	VSUMD2/////-1		Transistor	AC
Q9401	VSUPUMX1///-1		Transistor	AC

DIODES AND LED'S

D401	VHDMA133///-1	Diode	AB
D601	VHDMA132K//-1	Diode	AA
D701	RH-DX0182TAZZ	Diode	AD
D702	RH-DX0182TAZZ	Diode	AD
D801	VHDHVU17TRF-1	Diode	AE
D802	VHDMA132K//-1	Diode	AA
D803	VHDHVC359TR-1	Diode	AD
D805	RH-EX0189TAZZ	Zener Diode	AC
D901	VHDF1J2H///-1	Diode	AD
D902	RH-EX0193TAZZ	Zener Diode	AC
D903	VHD1SS355//-1	Diode	AB
D904	VHDDA227///-1	Diode	AB
D905	VHDF01J2E//-1	Diode	AC
D906	VHDF1J2H///-1	Diode	AD
D1901	VHDMA2S111/-1	Diode	AC
D5401	VHDHVU17TRF-1	Diode	AE

PACKAGED CIRCUITS

TH800	VHHT1103K44-1	Thermistor	AD
TH5401	VHHT1222K41-1	Thermistor	AD
X401	RCRSC0116TAZZ	Crystal	AG
X701	RCRSC0033TAZZ	Crystal	AG
X702	RCRSC0032TAZZ	Crystal	AG
X800	RCRSC0096TAZZ	Crystal	AL

COIL AND TRANSFORMERS

FL701	RCiLB0039TAZZ	Oscillation Coil	AE
FL5401	RCiLF0320TAZZ	Coil	AK
FL5451	RCiLF0346TAZZ	Coil	AG
FL6401	RCiLF0345TAZZ	Coil	AG
L401	VPAXM220KR88N	Peaking 22µH 10%	AC
L402	VPAWM101J140N	Peaking 100µH 5%	AC
L403	VPAEM820J7R7N	Peaking 82µH 5%	AC
L404	VPAEM470J5R4N	Peaking 47µH 5%	AC
L601	VPAXM101K4R0N	Peaking 100µH 10%	AC
L602	VPAXM101K4R0N	Peaking 100µH 10%	AC
L603	VP-WM220KR71N	Peaking 22µH 10%	AB
L701	RCiLP0241TAZZ	Coil	AF
L702	VPAXM220KR88N	Peaking 22µH 10%	AC
L703	VPAXM220KR88N	Peaking 22µH 10%	AC
L800	VPAWM560J7R2N	Peaking 56µH 5%	AC
L801	VPAWM680J110N	Peaking 68µH 5%	AC

Ref. No.	Part No.	★	Description	Code
L802	VPAXM470K1R7N		Peaking 47µH 10%	AC
L803	VPAXM100KR42N		Peaking 10µH 10%	AC
L804	VPAWM1R2JR78N		Peaking 1.2µH 5%	AD
L805	VPAEM220J2R9N		Peaking 22µH 5%	AC
L901	RCiLP0226TAZZ		Coil	AE
L902	RCiLP0206TAZZ		Coil	AE
L903	VPAXM101K4R0N		Peaking 100µH 10%	AC
L904	VPAXM100KR42N		Peaking 10µH 10%	AC
L905	RCiLP0160TAZZ		Coil	AE
L906	RCiLP0206TAZZ		Coil	AE
L907	VPAXM100KR42N		Peaking 10µH 10%	AC
L908	VPAXM2R2MR16N		Peaking 2.2µH 20%	AC
L909	VPAXM100KR42N		Peaking 10µH 10%	AC
L910	VPAXM2R2MR16N		Peaking 2.2µH 20%	AC
L911	RCiLP0160TAZZ		Coil	AE
L912	RCiLP0206TAZZ		Coil	AE
L913	VPAXM100KR42N		Peaking 10µH 10%	AC
L914	RCiLP0226TAZZ		Coil	AE
L915	VPBAM100KR26N		Peaking 10µH 10%	AC
L916	VPBAM100KR26N		Peaking 10µH 10%	AC
L917	VPBAM2R2M090N		Peaking 2.2µH 20%	AC
L918	VPBAM100KR26N		Peaking 10µH 10%	AC
L919	RCiLP0160TAZZ		Coil	AE
L920	RCiLP0206TAZZ		Coil	AE
L921	VPAXM2R2MR16N		Peaking 2.2µH 20%	AC
L922	VPAXM100KR42N		Peaking 10µH 10%	AC
L923	RCiLP0160TAZZ		Coil	AE
L924	RCiLP0205TAZZ		Coil	AE
L925	RCiLP0205TAZZ		Coil	AE
L926	RCiLP0206TAZZ		Coil	AE
L927	RCiLP0223TAZZ		Coil	AE
L931	VPAXM101K4R0N		Peaking 100µH 10%	AC
L932	RCiLP0226TAZZ		Coil	AE
L1701	VPAXM220KR88N		Peaking 22µH 10%	AC
L2701	VPAXM220KR88N		Peaking 22µH 10%	AC
L3701	VPAXM2R2MR16N		Peaking 2.2µH 20%	AC
L4401	VPAXM470K1R7N		Peaking 47µH 10%	AC
L7402	VPAEM121J9R0N		Peaking 120µH 5%	AC
L7403	VPAEM391J220N		Peaking 390µH 5%	AC
L7404	VPAWM1R8JR98N		Peaking 1.8µH 5%	AC
L7405	VPAEM471J250N		Peaking 470µH 5%	AC
L8401	VPAWM6R8J2R1N		Peaking 6.8µH 5%	AC
L8402	VPAWM100J2R6N		Peaking 10µH 5%	AC
L8403	VPAWM8R2J2R3N		Peaking 8.2µH 5%	AD
L8404	VPAEM121J9R0N		Peaking 120µH 5%	AC
L8405	VPAEM471J250N		Peaking 470µH 5%	AC
L8407	VPAEM331J210N		Peaking 330µH 5%	AC
L8408	VPAEM471J250N		Peaking 470µH 5%	AC

Ref. No.	Part No.	★	Description	Code
⚠ T901	RTRNZ0128TAZZ		Transformer	AH

CAPACITORS

C402	VCKYCZ1CB103K		0.01	16V	Ceramic	AB
C403	VCKYCZ1CB103K		0.01	16V	Ceramic	AB
C404	RC-KZ0051TAZZ		Capacitor			AC
C405	VCSATA1AJ106M		10	10V	Tantalum	AC
C406	VCSATA1AJ335M		3.3	10V	Tantalum	AC
C407	VCKYCZ1HF103Z		0.01	50V	Ceramic	AB
C408	VCSATA1AJ475M		4.7	10V	Tantalum	AC
C409	VCSATA1AJ475M		4.7	10V	Tantalum	AC
C410	RC-KZ0051TAZZ		Capacitor			AC
C411	RC-KZ0051TAZZ		Capacitor			AC
C412	RC-KZ0055TAZZ		Capacitor			AD
C413	RC-KZ0055TAZZ		Capacitor			AD
C414	VCKYTV1CB224K		0.22	16V	Ceramic	AB
C415	VCSATA1AJ106M		10	10V	Tantalum	AC
C416	VCSATA1AJ475M		4.7	10V	Tantalum	AC
C417	VCSATA1AJ106M		10	10V	Tantalum	AC
C418	VCSATA1AJ335M		3.3	10V	Tantalum	AC
C419	VCKYCZ1CB103K		0.01	16V	Ceramic	AB
C420	VCCCCY1HH151J		150p	50V	Ceramic	AA
C421	RC-KZ0051TAZZ		Capacitor			AC
C423	VCKYCY1HB682K		6800p	50V	Ceramic	AA
C424	VCCCCY1HH331J		330p	50V	Ceramic	AA
C425	VCCCCY1HH391J		390p	50V	Ceramic	AA
C426	VCCCCZ1HH270J		27p	50V	Ceramic	AB
C427	VCKYCZ1CB103K		0.01	16V	Ceramic	AB
C428	VCSATA1AJ106M		10	10V	Tantalum	AC
C429	VCKYCZ1HF103Z		0.01	50V	Ceramic	AB
C430	VCKYCZ1CB103K		0.01	16V	Ceramic	AB
C431	VCCCCZ1HH560J		56p	50V	Ceramic	AB
C432	VCKYCZ1CB103K		0.01	16V	Ceramic	AB
C433	VCKYCZ1HF103Z		0.01	50V	Ceramic	AB
C435	VCKYCZ1CB103K		0.01	16V	Ceramic	AB
C436	VCKYCZ1CB103K		0.01	16V	Ceramic	AB
C437	VCCCCY1EH681J		680p	25V	Ceramic	AB
C438	RC-KZ0055TAZZ		Capacitor			AD
C439	VCCCCY1EH561J		560p	25V	Ceramic	AA
C440	VCKYCZ1CB103K		0.01	16V	Ceramic	AB
C441	VCKYCZ1CB103K		0.01	16V	Ceramic	AB
C442	VCCCCZ1HH470J		47p	50V	Ceramic	AB
C443	VCCCCZ1HH470J		47p	50V	Ceramic	AB
C445	VCKYCZ1CB103K		0.01	16V	Ceramic	AB
C446	RC-KZ0051TAZZ		Capacitor			AC
C447	VCSATA1AJ106M		10	10V	Tantalum	AC
C448	VCKYCZ1CB103K		0.01	16V	Ceramic	AB
C449	VCSATJ1AJ476M		47	10V	Tantalum	AE

Ref. No.	Part No.	★	Description			Code
C451	VCSATA1AJ106M		10	10V	Tantalum	AC
C453	VCCCCY1HH270J		27p	50V	Ceramic	AA
C454	VCKYCZ1CB103K		0.01	16V	Ceramic	AB
C455	VCKYTV1CB474K		0.47	16V	Ceramic	AC
C457	RC-KZ0051TAZZ		Capacitor			AC
C458	VCCCCY1HH271J		270p	50V	Ceramic	AA
C459	VCKYCZ1CB103K		0.01	16V	Ceramic	AB
C601	VCSATA1CJ225M		2.2	16V	Tantalum	AC
C602	VCKYTV1CF225Z		2.2	16V	Ceramic	AC
C603	VCSATJ1AJ476M		47	10V	Tantalum	AE
C604	VCSATJ1AJ476M		47	10V	Tantalum	AE
C605	VCKYCY1HB103K		0.01	50V	Ceramic	AA
C606	VCKYCY1HB103K		0.01	50V	Ceramic	AA
C607	VCKYCY1HB103K		0.01	50V	Ceramic	AA
C608	VCKYCY1HB103K		0.01	50V	Ceramic	AA
C609	VCKYCY1CF334Z		0.33	16V	Ceramic	AA
C610	VCKYCY1HB103K		0.01	50V	Ceramic	AA
C611	VCSATE0JJ226M		22	6.3V	Tantalum	AD
C612	VCEAPH1HW474M		0.47	50V	Electrolytic	AB
C613	VCKYCY1HB103K		0.01	50V	Ceramic	AA
C614	VCKYTV1HB223K		0.022	50V	Ceramic	AB
C615	VCEAPH1HW105M		1.0	50V	Electrolytic	AB
C616	VCKYCY1HB102K		1000p	50V	Ceramic	AA
C617	VCSATE1AJ336M		33	10V	Tantalum	AG
C618	RC-KZ0051TAZZ		Capacitor			AC
C619	VCSATE1DJ475M		4.7	20V	Tantalum	AD
C620	VCKYCY1HB103K		0.01	50V	Ceramic	AA
C621	VCSATE1DJ475M		4.7	20V	Tantalum	AD
C622	VCSAPD1DJ474M		0.47	20V	Tantalum	AD
C623	VCSATE1CJ106M		10	16V	Tantalum	AD
C624	VCEAPF0JW476M		47	6.3V	Electrolytic	AB
C625	VCSATE1DJ475M		4.7	20V	Tantalum	AD
C626	VCKYCY1HB103K		0.01	50V	Ceramic	AA
C627	VCKYCY1HB103K		0.01	50V	Ceramic	AA
C628	VCKYCY1HB682K		6800p	50V	Ceramic	AA
C629	VCKYCY1HB332K		3300p	50V	Ceramic	AA
C630	VCKYCY1HB103K		0.01	50V	Ceramic	AA
C631	VCSATA1EJ105M		1.0	25V	Tantalum	AC
C632	VCKYCY1HB222K		2200p	50V	Ceramic	AA
C633	VCKYCY1CB104K		0.1	16V	Ceramic	AB
C634	VCKYCY1CB104K		0.1	16V	Ceramic	AB
C635	VCKYCY1HB103K		0.01	50V	Ceramic	AA
C636	VCSATA1EJ105M		1.0	25V	Tantalum	AC
C637	VCSATJ1AJ476M		47	10V	Tantalum	AE
C638	VCKYCY1CB104K		0.1	16V	Ceramic	AB
C701	VCKYCY1HB102K		1000p	50V	Ceramic	AA
C702	VCKYCY1HB102K		1000p	50V	Ceramic	AA
C703	VCKYCY1HB102K		1000p	50V	Ceramic	AA
C704	VCKYCY1HB102K		1000p	50V	Ceramic	AA
C705	VCKYCY1HB102K		1000p	50V	Ceramic	AA
C706	VCKYCY1HB102K		1000p	50V	Ceramic	AA
C707	VCEAPF1AW476M		47	10V	Electrolytic	AB
C708	VCSATJ1CJ226M		22	16V	Tantalum	AE
C709	VCSATA1AJ475M		4.7	10V	Tantalum	AC
C710	VCEAPF0JW107M		100	6.3V	Electrolytic	AC
C711	VCKYCY1CF104Z		0.1	16V	Ceramic	AA
C712	VCKYCY1CF104Z		0.1	16V	Ceramic	AA
C713	VCKYCY1CB104K		0.1	16V	Ceramic	AB
C714	VCKYCY1CF104Z		0.1	16V	Ceramic	AA
C715	VCKYCY1CB104K		0.1	16V	Ceramic	AB
C716	VCCCCY1HH180J		18p	50V	Ceramic	AA
C717	VCKYCY1HB471K		470p	50V	Ceramic	AA
C718	VCCCCY1HH180J		18p	50V	Ceramic	AA
C719	VCKYCY1EB103K		0.01	25V	Ceramic	AA
C720	VCKYCY1HB102K		1000p	50V	Ceramic	AA
C721	VCKYCY1HB102K		1000p	50V	Ceramic	AA
C722	VCKYCY1HB102K		1000p	50V	Ceramic	AA
C723	VCKYCY1CB104K		0.1	16V	Ceramic	AB
C724	VCKYCY1HB682K		6800p	50V	Ceramic	AA
C725	VCKYCY1HB102K		1000p	50V	Ceramic	AA
C726	VCKYCY1CF104Z		0.1	16V	Ceramic	AA
C727	VCKYCY1CB104K		0.1	16V	Ceramic	AB
C728	VCKYCY1EB103K		0.01	25V	Ceramic	AA
C729	VCKYCY1AF105Z		1.0	10V	Ceramic	AC
C730	VCEAPH1EW475M		4.7	25V	Electrolytic	AB
C731	VCKYCY1CF104Z		0.1	16V	Ceramic	AA
C732	VCKYCY1CB104K		0.1	16V	Ceramic	AB
C733	VCCCCY1HH200J		20p	50V	Ceramic	AA
C734	VCKYCY1CB104K		0.1	16V	Ceramic	AB
C801	VCKYCZ1HB471K		470p	50V	Ceramic	AB
C803	RC-KZ0051TAZZ		Capacitor			AC
C804	VCKYCZ1HF103Z		0.01	50V	Ceramic	AB
C805	VCKYCZ1HF103Z		0.01	50V	Ceramic	AB
C806	VCKYCZ1HF103Z		0.01	50V	Ceramic	AB
C807	VCKYCZ1HF103Z		0.01	50V	Ceramic	AB
C808	VCKYCZ1HF103Z		0.01	50V	Ceramic	AB
C809	VCKYCZ1HF103Z		0.01	50V	Ceramic	AB
C810	VCKYTV1CF105Z		1.0	16V	Ceramic	AB
C811	VCKYCZ1HF103Z		0.01	50V	Ceramic	AB
C812	VCKYCZ1HF103Z		0.01	50V	Ceramic	AB
C813	VCKYTV1CF105Z		1.0	16V	Ceramic	AB
C814	VCKYCZ1HF103Z		0.01	50V	Ceramic	AB
C815	VCKYTV1CF105Z		1.0	16V	Ceramic	AB
C816	VCKYCZ1HF103Z		0.01	50V	Ceramic	AB
C817	VCKYCZ1HF103Z		0.01	50V	Ceramic	AB
C818	VCKYCZ1HF103Z		0.01	50V	Ceramic	AB

Ref. No.	Part No.	★	Description	Code
C819	VCCCCZ1HH6R0D		6.0p 50V Ceramic	AA
C820	VCCCCZ1HH560J		56p 50V Ceramic	AB
C821	VCKYTV1CF105Z		1.0 16V Ceramic	AB
C822	VCKYTV1CB474K		0.47 16V Ceramic	AC
C823	VCSATA1AJ335M		3.3 10V Tantalum	AC
C824	VCKYCZ1HF103Z		0.01 50V Ceramic	AB
C825	VCKYCZ1CB103K		0.01 16V Ceramic	AB
C826	VCKYCZ1CB103K		0.01 16V Ceramic	AB
C827	VCKYCZ1CB103K		0.01 16V Ceramic	AB
C829	VCCCCZ1HH390J		39p 50V Ceramic	AB
C830	VCSATJ1CJ226M		22 16V Tantalum	AE
C831	VCSATA1AJ106M		10 10V Tantalum	AC
C832	VCKYCZ1HF103Z		0.01 50V Ceramic	AB
C833	VCCCCZ1HH390J		39p 50V Ceramic	AB
C834	VCKYCZ1HB681K		680p 50V Ceramic	AB
C836	VCKYCZ1HF103Z		0.01 50V Ceramic	AB
C837	VCCCCZ1HH8R0D		8.0p 50V Ceramic	AB
C838	VCCCCZ1HH150J		15p 50V Ceramic	AB
C839	VCKYCY1CF334Z		0.33 16V Ceramic	AA
C840	VCKYCZ1HF103Z		0.01 50V Ceramic	AB
C841	VCKYCZ1HF103Z		0.01 50V Ceramic	AB
C842	VCKYCZ1HF103Z		0.01 50V Ceramic	AB
C843	VCSATE1AJ336M		33 10V Tantalum	AG
C846	VCKYCY1CF104Z		0.1 16V Ceramic	AA
C847	VCKYCZ1HB561K		560p 50V Ceramic	AC
C848	RC-KZ0051TAZZ		Capacitor	AC
C849	VCKYCY1CF104Z		0.1 16V Ceramic	AA
C850	VCCCCZ1HH8R0D		8.0p 50V Ceramic	AB
C851	VCKYCY1CF104Z		0.1 16V Ceramic	AA
C852	RC-KZ0051TAZZ		Capacitor	AC
C853	VCSATE1AJ336M		33 10V Tantalum	AG
C854	VCKYCZ1HF103Z		0.01 50V Ceramic	AB
C855	VCKYCZ1HB102K		1000p 50V Ceramic	AB
C856	VCKYCY1CF104Z		0.1 16V Ceramic	AA
C857	RC-KZ0051TAZZ		Capacitor	AC
C860	VCCCCZ1HH121J		120p 50V Ceramic	AB
C861	VCKYCY1CF104Z		0.1 16V Ceramic	AA
C864	VCKYCY1CF224Z		0.22 16V Ceramic	AA
C866	VCKYCY1CF104Z		0.1 16V Ceramic	AA
C872	VCCCCZ1HH101J		100p 50V Ceramic	AB
C874	VCSATA1DJ475M		4.7 20V Tantalum	AC
C876	VCKYCZ1HF103Z		0.01 50V Ceramic	AB
C877	VCKYCY1CF104Z		0.1 16V Ceramic	AA
C878	VCKYCY1CF104Z		0.1 16V Ceramic	AA
C879	VCKYCZ1HF103Z		0.01 50V Ceramic	AB
C880	RC-KZ0051TAZZ		Capacitor	AC
C881	RC-KZ0051TAZZ		Capacitor	AC
C883	VCKYCY1CF104Z		0.1 16V Ceramic	AA

Ref. No.	Part No.	★	Description	Code
C890	VCSATJ1CJ226M		22 16V Tantalum	AE
C900	VCEAPF1AW476M		47 10V Electrolytic	AB
C902	RC-KZ0055TAZZ		Capacitor	AD
C903	RC-KZ0055TAZZ		Capacitor	AD
C904	RC-KZ0055TAZZ		Capacitor	AD
C905	RC-KZ0049TAZZ		Capacitor	AD
C906	RC-KZ0042TAZZ		Capacitor	AE
C907	RC-KZ0055TAZZ		Capacitor	AD
C908	RC-KZ0055TAZZ		Capacitor	AD
C909	RC-KZ0027TAZZ		Capacitor	AF
C910	RC-KZ0042TAZZ		Capacitor	AE
C911	RC-KZ0055TAZZ		Capacitor	AD
C912	RC-KZ0055TAZZ		Capacitor	AD
C913	RC-KZ0055TAZZ		Capacitor	AD
C914	RC-KZ0049TAZZ		Capacitor	AD
C915	RC-KZ0061TAZZ		Capacitor	AC
C916	RC-KZ0061TAZZ		Capacitor	AC
C917	RC-KZ0048TAZZ		Capacitor	AD
C918	RC-KZ0061TAZZ		Capacitor	AC
C919	VCKYTV1EB104K		0.1 25V Ceramic	AB
C920	VCKYTV1EB104K		0.1 25V Ceramic	AB
C921	VCKYTQ1CB105K		1.0 16V Ceramic	AC
C922	VCKYTV1EB104K		0.1 25V Ceramic	AB
C923	RC-KZ0042TAZZ		Capacitor	AE
C924	RC-KZ0042TAZZ		Capacitor	AE
C925	VCKYTV1CF105Z		1.0 16V Ceramic	AB
C926	VCKYTV1AB105K		1.0 10V Ceramic	AD
C927	RC-KZ0042TAZZ		Capacitor	AE
C928	RC-KZ0049TAZZ		Capacitor	AD
C929	RC-KZ0042TAZZ		Capacitor	AE
C930	RC-KZ0049TAZZ		Capacitor	AD
C931	RC-KZ0049TAZZ		Capacitor	AD
C940	VCKYCZ1CB103K		0.01 16V Ceramic	AB
C941	VCKYCY1EF104Z		0.1 25V Ceramic	AA
C942	VCKYTV1CF105Z		1.0 16V Ceramic	AB
C943	RC-CZ0017TAZZ		Capacitor	AE
C944	VCKYTV1CF105Z		1.0 16V Ceramic	AB
C945	VCKYCY1EB103K		0.01 25V Ceramic	AA
C1402	RC-KZ0051TAZZ		Capacitor	AC
C1403	RC-KZ0042TAZZ		Capacitor	AE
C1404	VCKYCZ1CB103K		0.01 16V Ceramic	AB
C1405	VCSATA1AJ106M		10 10V Tantalum	AC
C1701	VCSATE1AJ336M		33 10V Tantalum	AG
C1702	VCKYCY1HF103Z		0.01 50V Ceramic	AA
C1703	VCKYCY1HF103Z		0.01 50V Ceramic	AA
C1704	VCKYCY1CF104Z		0.1 16V Ceramic	AA
C1705	VCKYCY1HF103Z		0.01 50V Ceramic	AA
C1706	VCKYCY1HF103Z		0.01 50V Ceramic	AA

Ref. No.	Part No.	★	Description	Code
C1707	VCKYCY1HF103Z		0.01 50V Ceramic	AA
C1708	VCKYCY1CF104Z		0.1 16V Ceramic	AA
C1709	VCKYCY1HF103Z		0.01 50V Ceramic	AA
C1710	VCCCCY1HH8R0D		8.0p 50V Ceramic	AA
C1711	VCKYCY1HB472K		4700p 50V Ceramic	AA
C1901	VCKYTV1EB104K		0.1 25V Ceramic	AB
C1902	VCKYCY1HB332K		3300p 50V Ceramic	AA
C1903	VCKYCY1CB104K		0.1 16V Ceramic	AB
C1904	VCKYCZ1HB222K		2200p 50V Ceramic	AB
C1906	VCKYCZ1CB103K		0.01 16V Ceramic	AB
C1907	VCKYCY1CB104K		0.1 16V Ceramic	AB
C1908	VCKYCZ1EB682K		6800p 25V Ceramic	AB
C1909	VCKYCY1CB104K		0.1 16V Ceramic	AB
C1910	VCCCCY1HH181J		180p 50V Ceramic	AA
C1911	VCCCCY1HH181J		180p 50V Ceramic	AA
C1912	VCKYTV1CB474K		0.47 16V Ceramic	AC
C1913	VCKYTV1EB104K		0.1 25V Ceramic	AB
C1914	VCKYTV1EB104K		0.1 25V Ceramic	AB
C1915	VCKYTV1EB104K		0.1 25V Ceramic	AB
C1916	VCKYCY1CB333K		0.033 16V Ceramic	AA
C1917	VCKYTV1CF225Z		2.2 16V Ceramic	AC
C1918	VCKYCY1CB104K		0.1 16V Ceramic	AB
C1919	VCKYTV1EB104K		0.1 25V Ceramic	AB
C1920	VCKYCY1CB473K		0.047 16V Ceramic	AA
C1921	VCKYCZ1HB102K		1000p 50V Ceramic	AB
C1922	VCKYTV1EB104K		0.1 25V Ceramic	AB
C1923	VCKYCZ1HB102K		1000p 50V Ceramic	AB
C1924	VCKYTV1EB104K		0.1 25V Ceramic	AB
C1925	VCKYCZ1HB102K		1000p 50V Ceramic	AB
C1926	VCKYTV1EB104K		0.1 25V Ceramic	AB
C1927	VCKYCZ1HB102K		1000p 50V Ceramic	AB
C1928	VCKYTV1EB104K		0.1 25V Ceramic	AB
C2701	VCKYCY1CF104Z		0.1 16V Ceramic	AA
C2702	VCKYCY1CF104Z		0.1 16V Ceramic	AA
C2703	VCSATA1AJ475M		4.7 10V Tantalum	AC
C3701	VCKYCY1CF104Z		0.1 16V Ceramic	AA
C3702	VCKYCY1CF104Z		0.1 16V Ceramic	AA
C3703	VCKYCY1CF104Z		0.1 16V Ceramic	AA
C3704	VCKYCY1EB103K		0.01 25V Ceramic	AA
C3705	VCKYCY1EB103K		0.01 25V Ceramic	AA
C3706	VCKYCY1EB103K		0.01 25V Ceramic	AA
C3707	VCKYCY1CB104K		0.1 16V Ceramic	AB
C3708	VCKYCY1CF104Z		0.1 16V Ceramic	AA
C3709	VCKYCY1CB473K		0.047 16V Ceramic	AA
C3710	VCKYCY1CB473K		0.047 16V Ceramic	AA
C3711	VCKYCY1HB472K		4700p 50V Ceramic	AA
C3712	VCKYTV1CF105Z		1.0 16V Ceramic	AB
C3713	VCKYCY1HB682K		6800p 50V Ceramic	AA
C3714	VCKYCY1HB682K		6800p 50V Ceramic	AA
C3715	VCKYCY1CF104Z		0.1 16V Ceramic	AA
C3716	VCSATA1AJ106M		10 10V Tantalum	AC
C3717	VCKYCY1CF104Z		0.1 16V Ceramic	AA
C3718	VCSATA1AJ106M		10 10V Tantalum	AC
C3719	VCKYCY1CF104Z		0.1 16V Ceramic	AA
C3720	VCKYCY1CF104Z		0.1 16V Ceramic	AA
C3721	VCKYCY1CF104Z		0.1 16V Ceramic	AA
C3722	VCKYTV1CF105Z		1.0 16V Ceramic	AB
C3723	VCKYCY1CF104Z		0.1 16V Ceramic	AA
C3724	VCKYCY1CF104Z		0.1 16V Ceramic	AA
C3725	VCKYCY1CB104K		0.1 16V Ceramic	AB
C4402	VCSATA1AJ106M		10 10V Tantalum	AC
C4403	VCKYCZ1HF103Z		0.01 50V Ceramic	AB
C4404	VCKYCZ1CB103K		0.01 16V Ceramic	AB
C4405	VCKYCZ1EB472K		4700p 25V Ceramic	AB
C4406	VCKYCZ1CB103K		0.01 16V Ceramic	AB
C4407	RC-KZ0051TAZZ		Capacitor	AC
C4408	VCKYTV1EB104K		0.1 25V Ceramic	AB
C4409	VCKYCZ1CB103K		0.01 16V Ceramic	AB
C4410	RC-KZ0051TAZZ		Capacitor	AC
C4411	VCKYCZ1CB103K		0.01 16V Ceramic	AB
C4412	VCSATA1AJ106M		10 10V Tantalum	AC
C4413	VCSATA1AJ106M		10 10V Tantalum	AC
C4453	VCCCCZ1HH680J		68p 50V Ceramic	AB
C5401	VCKYCZ1CB103K		0.01 16V Ceramic	AB
C5402	VCCCCY1HH471J		470p 50V Ceramic	AA
C5403	VCCCCZ1HH820J		82p 50V Ceramic	AB
C5405	VCKYCZ1CB103K		0.01 16V Ceramic	AB
C5406	RC-KZ0051TAZZ		Capacitor	AC
C5452	VCCCCZ1HH820J		82p 50V Ceramic	AB
C6401	VCKYCZ1CB103K		0.01 16V Ceramic	AB
C6403	VCKYCZ1HF103Z		0.01 50V Ceramic	AB
C6404	VCKYCZ1HF103Z		0.01 50V Ceramic	AB
C6405	VCKYCZ1HF103Z		0.01 50V Ceramic	AB
C7401	VCCCCY1EH561J		560p 25V Ceramic	AA
C7404	VCCCCZ1HH470J		47p 50V Ceramic	AB
C7405	VCCCCZ1HH101J		100p 50V Ceramic	AB
C7406	VCCCCZ1HH121J		120p 50V Ceramic	AB
C7407	VCCCCZ1HH101J		100p 50V Ceramic	AB
C7409	VCCCCZ1HH100D		10p 50V Ceramic	AB
C7410	VCKYCZ1CB103K		0.01 16V Ceramic	AB
C8401	VCCCCZ1HH820J		82p 50V Ceramic	AB
C8402	VCCCCZ1HH560J		56p 50V Ceramic	AB
C8403	VCKYCZ1HF103Z		0.01 50V Ceramic	AB
C8404	VCCCCZ1HH150J		15p 50V Ceramic	AB
C8405	VCCCCZ1HH390J		39p 50V Ceramic	AB
C8406	VCCCCY1HH271J		270p 50V Ceramic	AA

Ref. No.	Part No.	★	Description	Code
C8407	VCKYCZ1CB103K		0.01 16V Ceramic	AB
C8408	VCCCCZ1HH330J		33p 50V Ceramic	AB
C8411	VCKYCY1CB104K		0.1 16V Ceramic	AB
C8412	VCCCCY1HH471J		470p 50V Ceramic	AA
C8413	VCCCCZ1HH330J		33p 50V Ceramic	AB
C8414	VCKYCY1HB222K		2200p 50V Ceramic	AA
C8415	VCKYCY1HB222K		2200p 50V Ceramic	AA
C8416	RC-KZ0051TAZZ		Capacitor	AC
C9401	VCKYCY1HF103Z		0.01 50V Ceramic	AA
C9402	VCKYCZ1CB103K		0.01 16V Ceramic	AB
C9403	VCCCCZ1HH100D		10p 50V Ceramic	AB
C9404	VCCCCZ1HH100D		10p 50V Ceramic	AB

RESISTORS

Ref. No.	Part No.	★	Description	Code
R401	VRS-CZ1JF682J		6.8k 1/16W Metal Oxide	AA
R403	VRS-CZ1JF682J		6.8k 1/16W Metal Oxide	AA
R405	VRS-CZ1JF102D		1.0k 1/16W Metal Oxide	AA
R406	VRS-CZ1JF621D		620 1/16W Metal Oxide	AA
R407	VRS-CZ1JF751D		750 1/16W Metal Oxide	AB
R409	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R412	VRS-CZ1JF332J		3.3k 1/16W Metal Oxide	AA
R413	VRS-CZ1JF684J		680k 1/16W Metal Oxide	AA
R416	VRS-CZ1JF474J		470k 1/16W Metal Oxide	AA
R420	VRS-CZ1JF471D		470 1/16W Metal Oxide	AA
R421	VRS-CZ1JF681J		680 1/16W Metal Oxide	AA
R423	VRS-CZ1JF222J		2.2k 1/16W Metal Oxide	AA
R424	VRS-CZ1JF302J		3.0k 1/16W Metal Oxide	AB
R425	VRS-CZ1JF122D		1.2k 1/16W Metal Oxide	AB
R426	VRS-CZ1JF181D		180 1/16W Metal Oxide	AB
R428	VRS-CZ1JF122D		1.2k 1/16W Metal Oxide	AB
R430	VRS-CZ1JF911D		910 1/16W Metal Oxide	AA
R431	VRS-CZ1JF910D		91 1/16W Metal Oxide	AA
R433	VRS-CZ1JF473J		47k 1/16W Metal Oxide	AA
R434	VRS-CZ1JF471J		470 1/16W Metal Oxide	AA
R436	VRS-CZ1JF103J		10k 1/16W Metal Oxide	AA
R437	VRS-CZ1JF103J		10k 1/16W Metal Oxide	AA
R438	VRS-CZ1JF822D		8.2k 1/16W Metal Oxide	AA
R440	VRS-CZ1JF152D		1.5k 1/16W Metal Oxide	AB
R442	VRS-CZ1JF223D		22k 1/16W Metal Oxide	AB
R443	VRS-CZ1JF152D		1.5k 1/16W Metal Oxide	AB
R444	VRS-CZ1JF331D		330 1/16W Metal Oxide	AA
R445	VRS-CZ1JF105J		1.0M 1/16W Metal Oxide	AA
R446	VRS-CZ1JF105J		1.0M 1/16W Metal Oxide	AA
R449	VRS-CZ1JF000J		00 1/16W Metal Oxide	AA
R451	VRS-CZ1JF000J		00 1/16W Metal Oxide	AA
R452	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R453	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R602	VRS-CZ1JF182J		1.8k 1/16W Metal Oxide	AA
R603	VRS-CZ1JF154J		150k 1/16W Metal Oxide	AA
R604	VRS-CZ1JF153J		15k 1/16W Metal Oxide	AA
R605	VRS-CZ1JF472J		4.7k 1/16W Metal Oxide	AA
R606	VRS-CZ1JF334J		330k 1/16W Metal Oxide	AA
R607	VRS-CZ1JF334J		330k 1/16W Metal Oxide	AA
R608	VRS-CZ1JF563J		56k 1/16W Metal Oxide	AA
R609	VRS-CZ1JF222J		2.2k 1/16W Metal Oxide	AA
R611	VRS-CZ1JF332J		3.3k 1/16W Metal Oxide	AA
R612	VRS-CZ1JF681J		680 1/16W Metal Oxide	AA
R614	VRS-CZ1JF122J		1.2k 1/16W Metal Oxide	AA
R615	VRS-CZ1JF561J		560 1/16W Metal Oxide	AA
R616	VRS-CZ1JF333J		33k 1/16W Metal Oxide	AA
R617	VRS-CZ1JF335J		3.3M 1/16W Metal Oxide	AA
R618	VRS-CZ1JF154J		150k 1/16W Metal Oxide	AA
R619	VRS-CZ1JF274J		270k 1/16W Metal Oxide	AA
R624	VRS-CZ1JF182J		1.8k 1/16W Metal Oxide	AA
R625	VRS-CZ1JF103J		10k 1/16W Metal Oxide	AA
R626	VRS-CZ1JF122J		1.2k 1/16W Metal Oxide	AA
R627	VRS-CZ1JF103J		10k 1/16W Metal Oxide	AA
R628	VRS-CZ1JF472J		4.7k 1/16W Metal Oxide	AA
R629	VRS-CZ1JF152J		1.5k 1/16W Metal Oxide	AA
R632	VRS-CZ1JF822J		8.2k 1/16W Metal Oxide	AA
R633	VRS-CZ1JF224J		220k 1/16W Metal Oxide	AA
R699	VRS-CZ1JF104J		100k 1/16W Metal Oxide	AA
R702	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R703	VRS-CZ1JF272J		2.7k 1/16W Metal Oxide	AA
R704	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R705	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R706	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R707	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R708	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R709	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R710	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R711	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R712	VRS-CZ1JF104J		100k 1/16W Metal Oxide	AA
R713	VRS-CZ1JF104J		100k 1/16W Metal Oxide	AA
R714	VRS-CZ1JF104J		100k 1/16W Metal Oxide	AA
R715	VRS-CZ1JF224J		220k 1/16W Metal Oxide	AA
R716	VRS-CZ1JF224J		220k 1/16W Metal Oxide	AA
R718	VRS-CZ1JF103J		10k 1/16W Metal Oxide	AA
R719	VRS-CZ1JF822J		8.2k 1/16W Metal Oxide	AA
R720	VRS-CZ1JF154J		150k 1/16W Metal Oxide	AA
R721	VRS-CZ1JF334J		330k 1/16W Metal Oxide	AA
R722	VRS-CZ1JF183J		18k 1/16W Metal Oxide	AA
R723	VRS-CZ1JF682J		6.8k 1/16W Metal Oxide	AA
R724	VRS-CZ1JF563D		56k 1/16W Metal Oxide	AA
R725	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R726	VRS-CZ1JF103J		10k 1/16W Metal Oxide	AA

Ref. No.	Part No.	★	Description	Code
R727	VRS-CZ1JF334J		330k 1/16W Metal Oxide	AA
R728	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R729	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R730	VRS-CZ1JF154J		150k 1/16W Metal Oxide	AA
R731	VRS-CZ1JF823J		82k 1/16W Metal Oxide	AA
R732	VRS-CZ1JF333J		33k 1/16W Metal Oxide	AA
R733	VRS-CZ1JF153J		15k 1/16W Metal Oxide	AA
R734	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R735	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R736	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R737	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R738	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R739	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R740	VRS-CZ1JF822J		8.2k 1/16W Metal Oxide	AA
R741	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R742	VRS-CZ1JF104J		100k 1/16W Metal Oxide	AA
R743	VRS-CZ1JF104J		100k 1/16W Metal Oxide	AA
R744	VRS-CZ1JF104J		100k 1/16W Metal Oxide	AA
R745	VRS-CZ1JF154J		150k 1/16W Metal Oxide	AA
R746	VRS-CZ1JF104J		100k 1/16W Metal Oxide	AA
R750	VRS-CZ1JF104J		100k 1/16W Metal Oxide	AA
R751	VRS-CZ1JF104J		100k 1/16W Metal Oxide	AA
R752	VRS-CZ1JF104J		100k 1/16W Metal Oxide	AA
R753	VRS-CZ1JF104J		100k 1/16W Metal Oxide	AA
R754	VRS-CZ1JF104J		100k 1/16W Metal Oxide	AA
R755	VRS-CZ1JF104J		100k 1/16W Metal Oxide	AA
R756	VRS-CZ1JF104J		100k 1/16W Metal Oxide	AA
R757	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R758	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R759	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R760	VRS-CZ1JF823J		82k 1/16W Metal Oxide	AA
R761	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R762	VRS-CZ1JF122J		1.2k 1/16W Metal Oxide	AA
R763	VRS-CZ1JF103J		10k 1/16W Metal Oxide	AA
R764	VRS-CZ1JF103J		10k 1/16W Metal Oxide	AA
R765	VRS-CZ1JF104J		100k 1/16W Metal Oxide	AA
R766	VRS-CZ1JF104J		100k 1/16W Metal Oxide	AA
R767	VRS-CZ1JF104J		100k 1/16W Metal Oxide	AA
R768	VRS-CZ1JF103J		10k 1/16W Metal Oxide	AA
R769	VRS-CZ1JF103J		10k 1/16W Metal Oxide	AA
R770	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R771	VRS-CZ1JF224J		220k 1/16W Metal Oxide	AA
R772	VRS-CZ1JF104J		100k 1/16W Metal Oxide	AA
R773	VRS-CZ1JF104J		100k 1/16W Metal Oxide	AA
R774	VRS-CZ1JF334J		330k 1/16W Metal Oxide	AA
R775	VRS-CZ1JF104J		100k 1/16W Metal Oxide	AA
R776	VRS-CZ1JF473J		47k 1/16W Metal Oxide	AA
R777	VRS-CZ1JF334J		330k 1/16W Metal Oxide	AA
R778	VRS-CZ1JF103J		10k 1/16W Metal Oxide	AA
R780	VRS-CZ1JF152J		1.5k 1/16W Metal Oxide	AA
R782	VRS-CZ1JF152J		1.5k 1/16W Metal Oxide	AA
R783	VRS-CZ1JF271J		270 1/16W Metal Oxide	AA
R784	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R785	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R786	VRS-CZ1JF152J		1.5k 1/16W Metal Oxide	AA
R787	VRS-CZ1JF271J		270 1/16W Metal Oxide	AA
R788	VRS-CZ1JF152J		1.5k 1/16W Metal Oxide	AA
R789	VRS-CZ1JF271J		270 1/16W Metal Oxide	AA
R800	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R801	VRS-CZ1JF823J		82k 1/16W Metal Oxide	AA
R802	VRS-CZ1JF823J		82k 1/16W Metal Oxide	AA
R805	VRS-CZ1JF304D		300k 1/16W Metal Oxide	AA
R809	VRS-CZ1JF363D		36k 1/16W Metal Oxide	AA
R810	VRS-CZ1JF563D		56k 1/16W Metal Oxide	AA
R811	VRS-CZ1JF473D		47k 1/16W Metal Oxide	AB
R812	VRS-CZ1JF393D		39k 1/16W Metal Oxide	AB
R815	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R816	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R817	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R818	VRS-CZ1JF363D		36k 1/16W Metal Oxide	AA
R819	VRS-CZ1JF203D		20k 1/16W Metal Oxide	AA
R820	VRS-CZ1JF333D		33k 1/16W Metal Oxide	AB
R821	VRS-CZ1JF273D		27k 1/16W Metal Oxide	AA
R825	VRS-CZ1JF105J		1.0M 1/16W Metal Oxide	AA
R826	VRS-CZ1JF124D		120k 1/16W Metal Oxide	AA
R828	VRS-CZ1JF223D		22k 1/16W Metal Oxide	AB
R829	VRS-CZ1JF163D		16k 1/16W Metal Oxide	AA
R832	VRS-CZ1JF122D		1.2k 1/16W Metal Oxide	AB
R833	VRS-CZ1JF183D		18k 1/16W Metal Oxide	AB
R835	VRS-CZ1JF272J		2.7k 1/16W Metal Oxide	AA
R836	VRS-CZ1JF562J		5.6k 1/16W Metal Oxide	AA
R837	VRS-CZ1JF822J		8.2k 1/16W Metal Oxide	AA
R838	VRS-CZ1JF334J		330k 1/16W Metal Oxide	AA
R839	VRS-CZ1JF334J		330k 1/16W Metal Oxide	AA
R840	VRS-CZ1JF562D		5.6k 1/16W Metal Oxide	AB
R841	VRS-CZ1JF393D		39k 1/16W Metal Oxide	AB
R842	VRS-CZ1JF393D		39k 1/16W Metal Oxide	AB
R843	VRS-CZ1JF223D		22k 1/16W Metal Oxide	AB
R844	VRS-CY1JF106J		10M 1/16W Metal Oxide	AA
R845	VRS-CZ1JF000J		00 1/16W Metal Oxide	AA
R847	VRS-CZ1JF105J		1.0M 1/16W Metal Oxide	AA
R849	VRS-CZ1JF274J		270k 1/16W Metal Oxide	AA
R851	VRS-CZ1JF363D		36k 1/16W Metal Oxide	AA
R854	VRS-CZ1JF563J		56k 1/16W Metal Oxide	AA
R855	VRS-CZ1JF104J		100k 1/16W Metal Oxide	AA
R858	VRS-CZ1JF393D		39k 1/16W Metal Oxide	AB

Ref. No.	Part No.	★	Description			Code
R859	VRS-CZ1JF683D		68k	1/16W	Metal Oxide	AB
R861	VRS-CZ1JF273J		27k	1/16W	Metal Oxide	AA
R862	VRS-CZ1JF563J		56k	1/16W	Metal Oxide	AA
R865	VRS-CZ1JF103D		10k	1/16W	Metal Oxide	AB
R866	VRS-CZ1JF393J		39k	1/16W	Metal Oxide	AA
R867	VRS-CZ1JF223J		22k	1/16W	Metal Oxide	AA
R868	VRS-CZ1JF473J		47k	1/16W	Metal Oxide	AA
R869	VRS-CZ1JF472J		4.7k	1/16W	Metal Oxide	AA
R870	VRS-CZ1JF472J		4.7k	1/16W	Metal Oxide	AA
R871	VRS-CZ1JF683J		68k	1/16W	Metal Oxide	AA
R872	VRS-CZ1JF105J		1.0M	1/16W	Metal Oxide	AA
R873	VRS-CZ1JF683J		68k	1/16W	Metal Oxide	AA
R874	VRS-CZ1JF473D		47k	1/16W	Metal Oxide	AB
R876	VRS-CZ1JF103J		10k	1/16W	Metal Oxide	AA
R877	VRS-CZ1JF223J		22k	1/16W	Metal Oxide	AA
R878	VRS-CZ1JF104J		100k	1/16W	Metal Oxide	AA
R879	VRS-CZ1JF564J		560k	1/16W	Metal Oxide	AA
R880	VRS-CZ1JF333J		33k	1/16W	Metal Oxide	AA
R882	VRS-CZ1JF561J		560	1/16W	Metal Oxide	AA
R883	VRS-CZ1JF153D		15k	1/16W	Metal Oxide	AB
R884	VRS-CZ1JF470J		47	1/16W	Metal Oxide	AA
R886	VRS-CZ1JF105J		1.0M	1/16W	Metal Oxide	AA
R887	VRS-CZ1JF561J		560	1/16W	Metal Oxide	AA
R888	VRS-CZ1JF222D		2.2k	1/16W	Metal Oxide	AA
R889	VRS-CZ1JF562D		5.6k	1/16W	Metal Oxide	AB
R890	VRS-CZ1JF471J		470	1/16W	Metal Oxide	AA
R891	VRS-CZ1JF000J		00	1/16W	Metal Oxide	AA
R892	VRS-CZ1JF123D		12k	1/16W	Metal Oxide	AA
R894	VRS-CZ1JF123D		12k	1/16W	Metal Oxide	AA
R895	VRS-CZ1JF391J		390	1/16W	Metal Oxide	AA
R896	VRS-CZ1JF561J		560	1/16W	Metal Oxide	AA
R897	VRS-CZ1JF471J		470	1/16W	Metal Oxide	AA
R898	VRS-CZ1JF224J		220k	1/16W	Metal Oxide	AA
R903	VRS-CZ1JF102J		1.0k	1/16W	Metal Oxide	AA
R907	VRS-CZ1JF102J		1.0k	1/16W	Metal Oxide	AA
R908	VRS-CZ1JF562J		5.6k	1/16W	Metal Oxide	AA
R910	VRS-CZ1JF102J		1.0k	1/16W	Metal Oxide	AA
R918	VRS-CZ1JF821D		820	1/16W	Metal Oxide	AA
R919	VRS-CZ1JF123D		12k	1/16W	Metal Oxide	AA
R920	VRS-CZ1JF152D		1.5k	1/16W	Metal Oxide	AB
R922	VRS-CZ1JF272D		2.7k	1/16W	Metal Oxide	AB
R923	VRS-CZ1JF123D		12k	1/16W	Metal Oxide	AA
R924	VRS-CZ1JF152D		1.5k	1/16W	Metal Oxide	AB
R925	VRS-CZ1JF103J		10k	1/16W	Metal Oxide	AA
R926	VRS-CZ1JF222D		2.2k	1/16W	Metal Oxide	AA
R927	VRS-CZ1JF472J		4.7k	1/16W	Metal Oxide	AA
R928	VRS-CZ1JF681J		680	1/16W	Metal Oxide	AA
R929	VRS-CZ1JF121D		120	1/16W	Metal Oxide	AB
R930	VRS-CY1JFR22J		0.22	1/16W	Metal Oxide	AA
R931	VRS-CZ1JF103J		10k	1/16W	Metal Oxide	AA
R935	VRS-CZ1JF000J		00	1/16W	Metal Oxide	AA
R950	VRS-CZ1JF102J		1.0k	1/16W	Metal Oxide	AA
R1403	VRS-CZ1JF332J		3.3k	1/16W	Metal Oxide	AA
R1404	VRS-CZ1JF750J		75	1/16W	Metal Oxide	AA
R1406	VRS-CZ1JF181J		180	1/16W	Metal Oxide	AA
R1407	VRS-CZ1JF362J		3.6k	1/16W	Metal Oxide	AA
R1408	VRS-CZ1JF682J		6.8k	1/16W	Metal Oxide	AA
R1409	VRS-CZ1JF222J		2.2k	1/16W	Metal Oxide	AA
R1411	VRS-CZ1JF153J		15k	1/16W	Metal Oxide	AA
R1701	VRS-CZ1JF103J		10k	1/16W	Metal Oxide	AA
R1702	VRS-CZ1JF273J		27k	1/16W	Metal Oxide	AA
R1703	VRS-CZ1JF223J		22k	1/16W	Metal Oxide	AA
R1704	VRS-CZ1JF683J		68k	1/16W	Metal Oxide	AA
R1720	VRS-CZ1JF472J		4.7k	1/16W	Metal Oxide	AA
R1721	VRS-CZ1JF472J		4.7k	1/16W	Metal Oxide	AA
R1722	VRS-CZ1JF472J		4.7k	1/16W	Metal Oxide	AA
R1801	VRS-CZ1JF103J		10k	1/16W	Metal Oxide	AA
R1802	VRS-CZ1JF103J		10k	1/16W	Metal Oxide	AA
R1803	VRS-CZ1JF433D		43k	1/16W	Metal Oxide	AA
R1804	VRS-CZ1JF331J		330	1/16W	Metal Oxide	AA
R1805	VRS-CZ1JF331J		330	1/16W	Metal Oxide	AA
R1806	VRS-CZ1JF102J		1.0k	1/16W	Metal Oxide	AA
R1807	VRS-CZ1JF562J		5.6k	1/16W	Metal Oxide	AA
R1808	VRS-CZ1JF124J		120k	1/16W	Metal Oxide	AA
R1809	VRS-CZ1JF273D		27k	1/16W	Metal Oxide	AA
R1810	VRS-CZ1JF183D		18k	1/16W	Metal Oxide	AB
R1811	VRS-CZ1JF512J		5.1k	1/16W	Metal Oxide	AB
R1812	VRS-CZ1JF103J		10k	1/16W	Metal Oxide	AA
R1814	VRS-CZ1JF272D		2.7k	1/16W	Metal Oxide	AB
R1817	VRS-CZ1JF474D		470k	1/16W	Metal Oxide	AA
R1818	VRS-CZ1JF363D		36k	1/16W	Metal Oxide	AA
R1820	VRS-CZ1JF393J		39k	1/16W	Metal Oxide	AA
R1821	VRS-CZ1JF393J		39k	1/16W	Metal Oxide	AA
R1901	VRS-CZ1JF332J		3.3k	1/16W	Metal Oxide	AA
R1902	VRS-CZ1JF333D		33k	1/16W	Metal Oxide	AB
R1904	VRS-CZ1JF105J		1.0M	1/16W	Metal Oxide	AA
R1905	VRS-CZ1JF682D		6.8k	1/16W	Metal Oxide	AB
R1906	VRS-CZ1JF103D		10k	1/16W	Metal Oxide	AB
R1907	VRS-CZ1JF102D		1.0k	1/16W	Metal Oxide	AA
R1908	VRS-CZ1JF333D		33k	1/16W	Metal Oxide	AB
R1909	VRS-CZ1JF683D		68k	1/16W	Metal Oxide	AB
R1910	VRS-CZ1JF105J		1.0M	1/16W	Metal Oxide	AA
R1911	VRS-CZ1JF682D		6.8k	1/16W	Metal Oxide	AB
R1912	VRS-CZ1JF182D		1.8k	1/16W	Metal Oxide	AB
R1913	VRS-CZ1JF183D		18k	1/16W	Metal Oxide	AB
R1914	VRS-CZ1JF333D		33k	1/16W	Metal Oxide	AB

Ref. No.	Part No.	★	Description	Code
R1916	VRS-CZ1JF105J		1.0M 1/16W Metal Oxide	AA
R1917	VRS-CZ1JF153D		15k 1/16W Metal Oxide	AB
R1918	VRS-CZ1JF183D		18k 1/16W Metal Oxide	AB
R1919	VRS-CZ1JF182D		1.8k 1/16W Metal Oxide	AB
R1920	VRS-CZ1JF333D		33k 1/16W Metal Oxide	AB
R1921	VRS-CZ1JF563D		56k 1/16W Metal Oxide	AA
R1922	VRS-CZ1JF331D		330 1/16W Metal Oxide	AA
R1923	VRS-CZ1JF302D		3.0k 1/16W Metal Oxide	AA
R1924	VRS-CZ1JF104J		100k 1/16W Metal Oxide	AA
R1925	VRS-CZ1JF153D		15k 1/16W Metal Oxide	AB
R1926	VRS-CZ1JF103D		10k 1/16W Metal Oxide	AB
R1927	VRS-CZ1JF152D		1.5k 1/16W Metal Oxide	AB
R1928	VRS-CZ1JF393D		39k 1/16W Metal Oxide	AB
R1929	VRS-CZ1JF562D		5.6k 1/16W Metal Oxide	AB
R1932	VRS-CZ1JF182J		1.8k 1/16W Metal Oxide	AA
R1933	VRS-CZ1JF822J		8.2k 1/16W Metal Oxide	AA
R1934	VRS-CZ1JF333J		33k 1/16W Metal Oxide	AA
R1935	VRS-CZ1JF123J		12k 1/16W Metal Oxide	AA
R1936	VRS-CZ1JF333J		33k 1/16W Metal Oxide	AA
R1937	VRS-CZ1JF123J		12k 1/16W Metal Oxide	AA
R1938	VRS-CZ1JF104D		100k 1/16W Metal Oxide	AB
R1939	VRS-CZ1JF000J		00 1/16W Metal Oxide	AA
R1940	VRS-CZ1JF333D		33k 1/16W Metal Oxide	AB
R1941	VRS-CZ1JF105J		1.0M 1/16W Metal Oxide	AA
R1942	VRS-CZ1JF104D		100k 1/16W Metal Oxide	AB
R1943	VRS-CZ1JF563D		56k 1/16W Metal Oxide	AA
R1944	VRS-CZ1JF562D		5.6k 1/16W Metal Oxide	AB
R1945	VRS-CZ1JF103D		10k 1/16W Metal Oxide	AB
R1946	VRS-CZ1JF272D		2.7k 1/16W Metal Oxide	AB
R1947	VRS-CZ1JF104D		100k 1/16W Metal Oxide	AB
R1948	VRS-CZ1JF183D		18k 1/16W Metal Oxide	AB
R1949	VRS-CZ1JF105J		1.0M 1/16W Metal Oxide	AA
R1950	VRS-CZ1JF683D		68k 1/16W Metal Oxide	AB
R1951	VRS-CZ1JF333D		33k 1/16W Metal Oxide	AB
R1952	VRS-CZ1JF103J		10k 1/16W Metal Oxide	AA
R1953	VRS-CZ1JF682J		6.8k 1/16W Metal Oxide	AA
R1954	VRS-CZ1JF153J		15k 1/16W Metal Oxide	AA
R1955	VRS-CZ1JF333J		33k 1/16W Metal Oxide	AA
R1956	VRS-CZ1JF183D		18k 1/16W Metal Oxide	AB
R1957	VRS-CZ1JF103D		10k 1/16W Metal Oxide	AB
R1958	VRS-CZ1JF103J		10k 1/16W Metal Oxide	AA
R1960	VRS-CZ1JF103J		10k 1/16W Metal Oxide	AA
R1961	VRS-CZ1JF682J		6.8k 1/16W Metal Oxide	AA
R1962	VRS-CZ1JF103J		10k 1/16W Metal Oxide	AA
R1963	VRS-CZ1JF103J		10k 1/16W Metal Oxide	AA
R1964	VRS-CZ1JF560J		56 1/16W Metal Oxide	AA
R1965	VRS-CZ1JF560J		56 1/16W Metal Oxide	AA
R1966	VRS-CZ1JF122J		1.2k 1/16W Metal Oxide	AA
R1967	VRS-CZ1JF272J		2.7k 1/16W Metal Oxide	AA
R1968	VRS-CZ1JF220J		22 1/16W Metal Oxide	AA
R1969	VRS-CZ1JF101J		100 1/16W Metal Oxide	AA
R1970	VRS-CZ1JF272J		2.7k 1/16W Metal Oxide	AA
R1979	VRS-CZ1JF183J		18k 1/16W Metal Oxide	AA
R2401	VRS-CZ1JF183J		18k 1/16W Metal Oxide	AA
R2402	VRS-CZ1JF183J		18k 1/16W Metal Oxide	AA
R2403	VRS-CZ1JF123J		12k 1/16W Metal Oxide	AA
R2404	VRS-CZ1JF223J		22k 1/16W Metal Oxide	AA
R2405	VRS-CZ1JF822J		8.2k 1/16W Metal Oxide	AA
R2406	VRS-CZ1JF512J		5.1k 1/16W Metal Oxide	AB
R2407	VRS-CZ1JF682J		6.8k 1/16W Metal Oxide	AA
R2408	VRS-CZ1JF682J		6.8k 1/16W Metal Oxide	AA
R2409	VRS-CZ1JF822J		8.2k 1/16W Metal Oxide	AA
R2410	VRS-CZ1JF822J		8.2k 1/16W Metal Oxide	AA
R2411	VRS-CZ1JF473J		47k 1/16W Metal Oxide	AA
R2412	VRS-CZ1JF473J		47k 1/16W Metal Oxide	AA
R2413	VRS-CZ1JF683J		68k 1/16W Metal Oxide	AA
R2414	VRS-CZ1JF683J		68k 1/16W Metal Oxide	AA
R2415	VRS-CZ1JF103J		10k 1/16W Metal Oxide	AA
R2416	VRS-CZ1JF822J		8.2k 1/16W Metal Oxide	AA
R2417	VRS-CZ1JF153J		15k 1/16W Metal Oxide	AA
R2418	VRS-CZ1JF332J		3.3k 1/16W Metal Oxide	AA
R2419	VRS-CZ1JF682J		6.8k 1/16W Metal Oxide	AA
R2420	VRS-CZ1JF822J		8.2k 1/16W Metal Oxide	AA
R2421	VRS-CZ1JF103J		10k 1/16W Metal Oxide	AA
R2423	VRS-CZ1JF223J		22k 1/16W Metal Oxide	AA
R2701	VRS-CZ1JF682J		6.8k 1/16W Metal Oxide	AA
R2730	VRS-CZ1JF224J		220k 1/16W Metal Oxide	AA
R2741	VRS-CZ1JF000J		00 1/16W Metal Oxide	AA
R2748	VRS-CZ1JF000J		00 1/16W Metal Oxide	AA
R2753	VRS-CZ1JF000J		00 1/16W Metal Oxide	AA
R2754	VRS-CZ1JF000J		00 1/16W Metal Oxide	AA
R2755	VRS-CZ1JF000J		00 1/16W Metal Oxide	AA
R2756	VRS-CZ1JF000J		00 1/16W Metal Oxide	AA
R2757	VRS-CZ1JF000J		00 1/16W Metal Oxide	AA
R2761	VRS-CZ1JF000J		00 1/16W Metal Oxide	AA
R2779	VRS-CZ1JF000J		00 1/16W Metal Oxide	AA
R2781	VRS-CZ1JF103J		10k 1/16W Metal Oxide	AA
R3701	VRS-CZ1JF822D		8.2k 1/16W Metal Oxide	AA
R3702	VRS-CZ1JF822D		8.2k 1/16W Metal Oxide	AA
R3703	VRS-CZ1JF822D		8.2k 1/16W Metal Oxide	AA
R3704	VRS-CY1JF1R0J		1.0 1/16W Metal Oxide	AA
R3705	VRS-CY1JF1R0J		1.0 1/16W Metal Oxide	AA
R3706	VRS-CZ1JF105J		1.0M 1/16W Metal Oxide	AA
R3707	VRS-CZ1JF223J		22k 1/16W Metal Oxide	AA
R3708	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R3709	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA

Ref. No.	Part No.	★	Description			Code
R3710	VRS-CZ1JF473J		47k	1/16W	Metal Oxide	AA
R3711	VRS-CZ1JF473J		47k	1/16W	Metal Oxide	AA
R3712	VRS-CZ1JF220J		22	1/16W	Metal Oxide	AA
R3713	VRS-CZ1JF220J		22	1/16W	Metal Oxide	AA
R3714	VRS-CZ1JF103D		10k	1/16W	Metal Oxide	AB
R4402	VRS-CZ1JF681J		680	1/16W	Metal Oxide	AA
R4403	VRS-CZ1JF152J		1.5k	1/16W	Metal Oxide	AA
R4407	VRS-CZ1JF821J		820	1/16W	Metal Oxide	AA
R4409	VRS-CZ1JF223J		22k	1/16W	Metal Oxide	AA
R4410	VRS-CZ1JF273J		27k	1/16W	Metal Oxide	AA
R4412	VRS-CZ1JF152J		1.5k	1/16W	Metal Oxide	AA
R4414	VRS-CZ1JF223J		22k	1/16W	Metal Oxide	AA
R4415	VRS-CZ1JF243J		24k	1/16W	Metal Oxide	AA
R4416	VRS-CZ1JF821J		820	1/16W	Metal Oxide	AA
R4417	VRS-CZ1JF102J		1.0k	1/16W	Metal Oxide	AA
R4419	VRS-CZ1JF561J		560	1/16W	Metal Oxide	AA
R4420	VRS-CZ1JF561J		560	1/16W	Metal Oxide	AA
R5402	VRS-CZ1JF242J		2.4k	1/16W	Metal Oxide	AA
R5403	VRS-CZ1JF202J		2.0k	1/16W	Metal Oxide	AA
R5404	VRS-CZ1JF122J		1.2k	1/16W	Metal Oxide	AA
R5405	VRS-CZ1JF122J		1.2k	1/16W	Metal Oxide	AA
R5406	VRS-CZ1JF000J		00	1/16W	Metal Oxide	AA
R5407	VRS-CZ1JF223J		22k	1/16W	Metal Oxide	AA
R5408	VRS-CZ1JF911J		910	1/16W	Metal Oxide	AA
R5409	VRS-CZ1JF223J		22k	1/16W	Metal Oxide	AA
R5410	VRS-CZ1JF821J		820	1/16W	Metal Oxide	AA
R5412	VRS-CZ1JF911J		910	1/16W	Metal Oxide	AA
R5413	VRS-CZ1JF431J		430	1/16W	Metal Oxide	AA
R5414	VRS-CZ1JF182J		1.8k	1/16W	Metal Oxide	AA
R5415	VRS-CZ1JF222J		2.2k	1/16W	Metal Oxide	AA
R5416	VRS-CZ1JF821J		820	1/16W	Metal Oxide	AA
R5417	VRS-CZ1JF472J		4.7k	1/16W	Metal Oxide	AA
R5451	VRS-CZ1JF102J		1.0k	1/16W	Metal Oxide	AA
R5452	VRS-CZ1JF242J		2.4k	1/16W	Metal Oxide	AA
R5453	VRS-CZ1JF202J		2.0k	1/16W	Metal Oxide	AA
R5454	VRS-CZ1JF821J		820	1/16W	Metal Oxide	AA
R5455	VRS-CZ1JF821J		820	1/16W	Metal Oxide	AA
R5456	VRS-CZ1JF911J		910	1/16W	Metal Oxide	AA
R5457	VRS-CZ1JF000J		00	1/16W	Metal Oxide	AA
R5458	VRS-CZ1JF101J		100	1/16W	Metal Oxide	AA
R6401	VRS-CZ1JF000J		00	1/16W	Metal Oxide	AA
R6402	VRS-CZ1JF000J		00	1/16W	Metal Oxide	AA
R6404	VRS-CZ1JF102J		1.0k	1/16W	Metal Oxide	AA
R6405	VRS-CZ1JF821J		820	1/16W	Metal Oxide	AA
R6406	VRS-CZ1JF821J		820	1/16W	Metal Oxide	AA
R6407	VRS-CZ1JF102J		1.0k	1/16W	Metal Oxide	AA
R6408	VRS-CZ1JF223J		22k	1/16W	Metal Oxide	AA
R6409	VRS-CZ1JF223J		22k	1/16W	Metal Oxide	AA
R6410	VRS-CZ1JF152J		1.5k	1/16W	Metal Oxide	AA
R7401	VRS-CZ1JF332J		3.3k	1/16W	Metal Oxide	AA
R7402	VRS-CZ1JF222J		2.2k	1/16W	Metal Oxide	AA
R7408	VRS-CZ1JF222J		2.2k	1/16W	Metal Oxide	AA
R7409	VRS-CZ1JF561J		560	1/16W	Metal Oxide	AA
R7410	VRS-CZ1JF561J		560	1/16W	Metal Oxide	AA
R7411	VRS-CZ1JF331J		330	1/16W	Metal Oxide	AA
R7412	VRS-CZ1JF472J		4.7k	1/16W	Metal Oxide	AA
R7413	VRS-CZ1JF181J		180	1/16W	Metal Oxide	AA
R7414	VRS-CZ1JF153J		15k	1/16W	Metal Oxide	AA
R7415	VRS-CZ1JF182J		1.8k	1/16W	Metal Oxide	AA
R7417	VRS-CZ1JF132J		1.3k	1/16W	Metal Oxide	AA
R7418	VRS-CZ1JF222J		2.2k	1/16W	Metal Oxide	AA
R7419	VRS-CZ1JF122J		1.2k	1/16W	Metal Oxide	AA
R7451	VRS-CZ1JF000J		00	1/16W	Metal Oxide	AA
R8402	VRS-CZ1JF152J		1.5k	1/16W	Metal Oxide	AA
R8403	VRS-CZ1JF331J		330	1/16W	Metal Oxide	AA
R8404	VRS-CZ1JF471J		470	1/16W	Metal Oxide	AA
R8405	VRS-CZ1JF471J		470	1/16W	Metal Oxide	AA
R8406	VRS-CZ1JF221J		220	1/16W	Metal Oxide	AA
R8407	VRS-CZ1JF392J		3.9k	1/16W	Metal Oxide	AA
R8408	VRS-CZ1JF152J		1.5k	1/16W	Metal Oxide	AA
R8409	VRS-CZ1JF103J		10k	1/16W	Metal Oxide	AA
R8410	VRS-CZ1JF821J		820	1/16W	Metal Oxide	AA
R8411	VRS-CZ1JF471J		470	1/16W	Metal Oxide	AA
R8412	VRS-CZ1JF471J		470	1/16W	Metal Oxide	AA
R8413	VRS-CZ1JF101J		100	1/16W	Metal Oxide	AA
R8414	VRS-CZ1JF222J		2.2k	1/16W	Metal Oxide	AA
R8415	VRS-CZ1JF561J		560	1/16W	Metal Oxide	AA
R8416	VRS-CZ1JF102J		1.0k	1/16W	Metal Oxide	AA
R8417	VRS-CZ1JF152J		1.5k	1/16W	Metal Oxide	AA
R8418	VRS-CZ1JF182J		1.8k	1/16W	Metal Oxide	AA
R8419	VRS-CZ1JF821J		820	1/16W	Metal Oxide	AA
R8420	VRS-CZ1JF122J		1.2k	1/16W	Metal Oxide	AA
R8422	VRS-CZ1JF103J		10k	1/16W	Metal Oxide	AA
R8423	VRS-CZ1JF152J		1.5k	1/16W	Metal Oxide	AA
R8424	VRS-CZ1JF152J		1.5k	1/16W	Metal Oxide	AA
R8425	VRS-CZ1JF182J		1.8k	1/16W	Metal Oxide	AA
R8426	VRS-CZ1JF181J		180	1/16W	Metal Oxide	AA
R8427	VRS-CZ1JF821J		820	1/16W	Metal Oxide	AA
R8428	VRS-CZ1JF122J		1.2k	1/16W	Metal Oxide	AA
R8429	VRS-CZ1JF272J		2.7k	1/16W	Metal Oxide	AA
R8430	VRS-CZ1JF152J		1.5k	1/16W	Metal Oxide	AA
R8431	VRS-CZ1JF821J		820	1/16W	Metal Oxide	AA
R8432	VRS-CZ1JF472J		4.7k	1/16W	Metal Oxide	AA
R8451	VRS-CZ1JF000J		00	1/16W	Metal Oxide	AA
R9402	VRS-CZ1JF152J		1.5k	1/16W	Metal Oxide	AA
R9403	VRS-CZ1JF152J		1.5k	1/16W	Metal Oxide	AA

Ref. No.	Part No.	★	Description	Code
R9404	VRS-CZ1JF152J		1.5k 1/16W Metal Oxide	AA
R9405	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R9406	VRS-CZ1JF152J		1.5k 1/16W Metal Oxide	AA
R9451	VRS-CZ1JF333J		33k 1/16W Metal Oxide	AA
R9452	VRS-CZ1JF223J		22k 1/16W Metal Oxide	AA
	MISCELLANEOUS PARTS			
	PSLDM9124TAZZ		Shield	AD
P601	QPLGN0263TAZZ		Plug	AB
P901	QPLGN0664TAZZ		Plug	AD
P902	QPLGN0364TAZZ		Plug	AC
P2601	QPLGN0264TAZZ		Plug	AC
SC601	QSOCN1171TAZZ		Socket	AD
SC804	QSOCN2486TAZZ		Socket	AE
SC901	QSOCN0787TAZZ		Socket	AC
SC902	QSOCN1786TAZZ		Socket	AE
SC903	QSOCN1586TAZZ		Socket	AD
SC4701	QSOCN0860TAZZ		Socket	AE
SLD1	PSLDM3239TAFW		Shield	AC
SLD2	PSLDM3238TAFW		Shield	AC
	RRMCK0034TAZZ		Remote Control Pause	AT
	CABINET PARTS			
P3301	QCNCM7068TAZZ		Connector	AG

DUNTK2785QA03 CAMERA UNIT(VL-E610S/E610H)
DUNTK2785QA04 CAMERA UNIT(VL-E96E)
DUNTK2785QA05 CAMERA UNIT(VL-E660S)
DUNTK2785QA06 CAMERA UNIT(VL-E98E)

Ref. No.	Part No.	★	Description	Code
	INTEGRATED CIRCUITS			
IC11	VHiUPD16510-1		UPD16510GR-8JG	AR
IC12	VHiLR38590/-1		LR38590	AR
IC101	VHiCXA2006Q-1		CXA2006Q	AV
IC102	VHiCXD2310A-1		CXD2310AR	AV
IC201	RH-iX0470TAZZ		HG73C002TE	AY
IC251	RH-iX0490TAZZ		IX0490TA	BB
			(VL-E660S/E98E)	
IC252	VHiMS548331-1		MSM548331TS-K	BD
			(VL-E660S/E98E)	
IC501	RH-iX0589TAZZ		UPD784037GK513	AX
			(VL-E660S/E98E)	
IC501	RH-iX0590TAZZ		UPD784036GK515	AW
			(VL-E610S/E610H/E96E)	
IC502	VHiMB8346BV-1		MB88346BPFV	AN
IC503	VHiPST597KN-1		IC-PST597KNR	AF
IC551	VHiMM1298XQ-1		MM1298XQ	AV
IC552	VHiNJM2902V-1		NJM2902V	AD
IC553	VHiNJM3414V-1		NJM3414AV	AF
	TRANSISTORS			
Q11	VSUMX2/////-1		Transistor	AB
Q201	VSUMX2/////-1		Transistor	AB
Q202	VSUMT2/////-1		Transistor	AB
Q203	VS2SC4617B/-1		Transistor	AA
Q552	VSDTA114TE/-1		Transistor	AA
	DIODES AND LED'S			
D501	VHDDA121///-1		Diode	AA
D551	VHDDA121///-1		Diode	AA
	PACKAGED CIRCUITS			
X11	RCRSZ0050TAZZ		Crystal	AS
	COIL AND TRANSFORMERS			
CF501	RFiLC0071TAZZ		Filter	AE
L11	VPAXM100KR42N		Peaking 10µH 10%	AC
L12	VPAXM470K1R7N		Peaking 47µH 10%	AC
L101	VPAXM100KR42N		Peaking 10µH 10%	AC
L102	VPAXM470K1R7N		Peaking 47µH 10%	AC
L201	VPAXM100KR42N		Peaking 10µH 10%	AC
L202	VPAXM470K1R7N		Peaking 47µH 10%	AC
L203	VPAWM100K1R5N		Peaking 10µH 10%	AC
L204	VPAWM6R8MR90N		Peaking 6.8µH 20%	AC
L205	VPABM3R9J1R6N		Peaking 3.9µH 5%	AD
L207	VPAXM100KR42N		Peaking 10µH 10%	AC
L251	VPAXM100KR42N		Peaking 10µH 10%	AC
			(VL-E660S/E98E)	
L252	VPAXM100KR42N		Peaking 10µH 10%	AC
			(VL-E660S/E98E)	
L501	VPAXM100KR42N		Peaking 10µH 10%	AC
L551	VPAXM220KR88N		Peaking 22µH 10%	AC
L552	VPAXM220KR88N		Peaking 22µH 10%	AC
	CAPACITORS			
C11	VCKYCZ1AF104Z		0.1 10V Ceramic	AB
C12	VCKYCZ1AF104Z		0.1 10V Ceramic	AB
C13	VCKYTV1HB103K		0.01 50V Ceramic	AA
C14	VCSATE1DJ475M		4.7 20V Tantalum	AD
C15	VCKYCZ1AF104Z		0.1 10V Ceramic	AB
C16	VCKYCZ1AF104Z		0.1 10V Ceramic	AB
C17	VCSATJ1VJ685M		6.8 35V Tantalum	AE
C18	VCKYCZ1HF103Z		0.01 50V Ceramic	AB
C19	VCKYCZ1AF104Z		0.1 10V Ceramic	AB
C20	VCSATA1AJ106M		10 10V Tantalum	AC
C21	RC-KZ0051TAZZ		Capacitor	AC

Ref. No.	Part No.	★	Description	Code
C22	RC-KZ0051TAZZ		Capacitor	AC
C23	VCKYCZ1HB102K		1000p 50V Ceramic	AB
C24	VCCCCZ1HH6R0D		6.0p 50V Ceramic	AA
C25	RC-JZ0001TAZZ		Capacitor	AC
C101	VCKYTV1AB105K		1.0 10V Ceramic	AD
C102	VCKYTV1AB105K		1.0 10V Ceramic	AD
C103	VCKYCZ1AF104Z		0.1 10V Ceramic	AB
C104	VCKYCZ1HF103Z		0.01 50V Ceramic	AB
C105	VCKYCZ1HF103Z		0.01 50V Ceramic	AB
C106	VCKYCZ1AF104Z		0.1 10V Ceramic	AB
C107	VCKYCY1EB223K		0.022 25V Ceramic	AA
C108	RC-KZ0051TAZZ		Capacitor	AC
C110	VCSATA1AJ106M		10 10V Tantalum	AC
C111	VCKYCZ1AF104Z		0.1 10V Ceramic	AB
C112	VCKYCZ1AF104Z		0.1 10V Ceramic	AB
C113	VCKYCZ1AF104Z		0.1 10V Ceramic	AB
C114	VCCCCZ1HH470J		47p 50V Ceramic	AB
C115	VCKYCZ1AF104Z		0.1 10V Ceramic	AB
C116	VCSATA0JJ156M		15 6.3V Tantalum	AC
C117	VCKYCZ1HF103Z		0.01 50V Ceramic	AB
C118	VCKYCZ1HF103Z		0.01 50V Ceramic	AB
C201	RC-KZ0051TAZZ		Capacitor	AC
C202	VCCCCZ1HH100D		10p 50V Ceramic	AB
C203	RC-KZ0051TAZZ		Capacitor	AC
C204	VCCCCZ1HH390J		39p 50V Ceramic	AB
C205	VCCCCZ1HH750J		75p 50V Ceramic	AB
C206	VCKYCZ1AF104Z		0.1 10V Ceramic	AB
C207	VCKYCZ1AF104Z		0.1 10V Ceramic	AB
C208	VCKYCZ1AF104Z		0.1 10V Ceramic	AB
C209	VCKYCZ1AF104Z		0.1 10V Ceramic	AB
C210	VCKYCZ1AF104Z		0.1 10V Ceramic	AB
C211	VCKYCZ1AF104Z		0.1 10V Ceramic	AB
C212	VCKYCZ1AF104Z		0.1 10V Ceramic	AB
C213	VCKYCZ1AF104Z		0.1 10V Ceramic	AB
C214	RC-KZ0051TAZZ		Capacitor	AC
C215	RC-KZ0051TAZZ		Capacitor	AC
C216	VCKYCZ1HF103Z		0.01 50V Ceramic	AB
C251	VCSATA0JJ156M		15 6.3V Tantalum	AC
			(VL-E660S/E98E)	
C252	VCKYCZ1HF103Z		0.01 50V Ceramic	AB
			(VL-E660S/E98E)	
C253	VCKYCZ1HF103Z		0.01 50V Ceramic	AB
			(VL-E660S/E98E)	
C254	VCKYCZ1HF103Z		0.01 50V Ceramic	AB
			(VL-E660S/E98E)	
C255	VCKYCZ1AF104Z		0.1 10V Ceramic	AB
			(VL-E660S/E98E)	
C256	VCKYCZ1HF103Z		0.01 50V Ceramic	AB
			(VL-E660S/E98E)	
C257	VCKYCZ1AF104Z		0.1 10V Ceramic	AB
			(VL-E660S/E98E)	
C258	VCKYCZ1HF103Z		0.01 50V Ceramic	AB
			(VL-E660S/E98E)	
C259	VCKYCZ1AF104Z		0.1 10V Ceramic	AB
			(VL-E660S/E98E)	
C260	VCSATA0JJ156M		15 6.3V Tantalum	AC
			(VL-E660S/E98E)	
C261	VCKYCZ1HF103Z		0.01 50V Ceramic	AB
			(VL-E660S/E98E)	
C501	VCKYCZ1HF103Z		0.01 50V Ceramic	AB
C502	VCSATA1AJ106M		10 10V Tantalum	AC
C503	VCKYCZ1HF103Z		0.01 50V Ceramic	AB
C504	VCKYCZ1HF103Z		0.01 50V Ceramic	AB
C505	VCKYCZ1AF104Z		0.1 10V Ceramic	AB
C551	VCSATE1CJ156M		15 16V Tantalum	AD
C553	VCKYCZ1HF103Z		0.01 50V Ceramic	AB
C554	VCKYCZ1HF103Z		0.01 50V Ceramic	AB
C555	VCSATA1AJ106M		10 10V Tantalum	AC
C559	VCSATA1AJ106M		10 10V Tantalum	AC
C560	VCSATA1AJ106M		10 10V Tantalum	AC
C561	VCKYCZ1HF103Z		0.01 50V Ceramic	AB
C562	VCKYCZ1HF103Z		0.01 50V Ceramic	AB
C563	VCKYCZ1HF103Z		0.01 50V Ceramic	AB
C564	VCKYCZ1AF104Z		0.1 10V Ceramic	AB
C565	VCSATA1AJ106M		10 10V Tantalum	AC
C566	VCKYCZ1HF103Z		0.01 50V Ceramic	AB
C567	VCKYCZ1HF103Z		0.01 50V Ceramic	AB
C568	VCCCCZ1HH151J		150p 50V Ceramic	AB
C569	VCKYCY1AF105Z		1.0 10V Ceramic	AC
C570	VCKYCZ1HF103Z		0.01 50V Ceramic	AB

RESISTORS

R13	VRS-CZ1JF000J		00	1/16W	Metal Oxide AA
R15	VRS-CZ1JF102J		1.0k	1/16W	Metal Oxide AA
R16	VRS-CZ1JF102J		1.0k	1/16W	Metal Oxide AA
R17	VRS-CZ1JF222J		2.2k	1/16W	Metal Oxide AA
R18	VRS-CZ1JF822J		8.2k	1/16W	Metal Oxide AA
R19	VRS-CZ1JF102J		1.0k	1/16W	Metal Oxide AA
R20	VRS-CZ1JF330J		33	1/16W	Metal Oxide AA
R23	VRS-CZ1JF105J		1.0M	1/16W	Metal Oxide AA
R24	VRS-CZ1JF561J		560	1/16W	Metal Oxide AA
R101	VRS-CZ1JF153D		15k	1/16W	Metal Oxide AB
R102	VRS-CZ1JF244D		240k	1/16W	Metal Oxide AA
R103	VRS-CZ1JF273J		27k	1/16W	Metal Oxide AA
R104	VRS-CZ1JF223J		22k	1/16W	Metal Oxide AA

Ref. No.	Part No.	★	Description	Code
R105	VRS-CZ1JF682J		6.8k 1/16W Metal Oxide	AA
R106	VRS-CZ1JF563J		56k 1/16W Metal Oxide	AA
R111	VRS-CZ1JF220J		22 1/16W Metal Oxide	AA
R112	VRS-CZ1JF104J		100k 1/16W Metal Oxide	AA
R201	VRS-CZ1JF182J		1.8k 1/16W Metal Oxide	AA
R202	VRS-CZ1JF681J		680 1/16W Metal Oxide	AA
R203	VRS-CZ1JF473J		47k 1/16W Metal Oxide	AA
R204	VRS-CZ1JF683J		68k 1/16W Metal Oxide	AA
R205	VRS-CZ1JF273J		27k 1/16W Metal Oxide	AA
R206	VRS-CZ1JF123J		12k 1/16W Metal Oxide	AA
R207	VRS-CZ1JF471J		470 1/16W Metal Oxide	AA
R208	VRS-CZ1JF822J		8.2k 1/16W Metal Oxide	AA
R209	VRS-CZ1JF471J		470 1/16W Metal Oxide	AA
R210	VRS-CZ1JF332J		3.3k 1/16W Metal Oxide	AA
R211	VRS-CZ1JF682J		6.8k 1/16W Metal Oxide	AA
R212	VRS-CZ1JF471J		470 1/16W Metal Oxide	AA
R213	VRS-CZ1JF471J		470 1/16W Metal Oxide	AA
R214	VRS-CZ1JF471J		470 1/16W Metal Oxide	AA
R215	VRS-CZ1JF471J		470 1/16W Metal Oxide	AA
R216	VRS-CZ1JF392J		3.9k 1/16W Metal Oxide	AA
R217	VRS-CZ1JF103J		10k 1/16W Metal Oxide	AA
R251	VRS-CZ1JF000J		00 1/16W Metal Oxide	AA
			(VL-E660S/E98E)	
R254	VRS-CZ1JF000J		00 1/16W Metal Oxide	AA
			(VL-E660S/E98E)	
R256	VRS-CZ1JF000J		00 1/16W Metal Oxide	AA
			(VL-E660S/E98E)	
R501	VRS-CZ1JF103J		10k 1/16W Metal Oxide	AA
R503	VRS-CZ1JF123J		12k 1/16W Metal Oxide	AA
R504	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R505	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R506	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R507	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R508	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R509	VRS-CZ1JF103J		10k 1/16W Metal Oxide	AA
R510	VRS-CZ1JF223J		22k 1/16W Metal Oxide	AA
R512	VRS-CZ1JF103J		10k 1/16W Metal Oxide	AA
R515	VRS-CZ1JF000J		00 1/16W Metal Oxide	AA
R517	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R518	VRS-CZ1JF153J		15k 1/16W Metal Oxide	AA
R519	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R520	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R521	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R522	VRS-CZ1JF103J		10k 1/16W Metal Oxide	AA
R523	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R524	VRS-CZ1JF223J		22k 1/16W Metal Oxide	AA
R525	VRS-CZ1JF103J		10k 1/16W Metal Oxide	AA
R526	VRS-CZ1JF224J		220k 1/16W Metal Oxide	AA
R527	VRS-CZ1JF224J		220k 1/16W Metal Oxide	AA
R528	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R529	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R530	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R531	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R532	VRS-CZ1JF203J		20k 1/16W Metal Oxide	AA
R533	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R536	VRS-CZ1JF153J		15k 1/16W Metal Oxide	AA
R561	VRS-CZ1JF223J		22k 1/16W Metal Oxide	AA
R563	VRS-CZ1JF223J		22k 1/16W Metal Oxide	AA
R569	VRS-CZ1JF103J		10k 1/16W Metal Oxide	AA
R570	VRS-CZ1JF682J		6.8k 1/16W Metal Oxide	AA
R571	VRS-CZ1JF392J		3.9k 1/16W Metal Oxide	AA
R573	VRS-CZ1JF103J		10k 1/16W Metal Oxide	AA
R574	VRS-CZ1JF912J		9.1k 1/16W Metal Oxide	AB
R575	VRS-CZ1JF104J		100k 1/16W Metal Oxide	AA
R576	VRS-CZ1JF153J		15k 1/16W Metal Oxide	AA
R577	VRS-CZ1JF102J		1.0k 1/16W Metal Oxide	AA
R578	VRS-CZ1JF103J		10k 1/16W Metal Oxide	AA
R581	VRS-CZ1JF562J		5.6k 1/16W Metal Oxide	AA
R582	VRS-CZ1JF334D		330k 1/16W Metal Oxide	AA
			(VL-E610S/E610H/E660S)	
R582	VRS-CZ1JF334F		330k 1/16W Metal Oxide	AB
			(VL-E96E/E98E)	
R583	VRS-CZ1JF474J		470k 1/16W Metal Oxide	AA
R584	VRS-CZ1JF221J		220 1/16W Metal Oxide	AA
R585	VRS-CZ1JF221J		220 1/16W Metal Oxide	AA
R586	VRS-CZ1JF103D		10k 1/16W Metal Oxide	AB
R587	VRS-CZ1JF122J		1.2k 1/16W Metal Oxide	AA
R588	VRS-CZ1JF472J		4.7k 1/16W Metal Oxide	AA
R589	VRS-CZ1JF222J		2.2k 1/16W Metal Oxide	AA
R590	VRS-CZ1JF103J		10k 1/16W Metal Oxide	AA
R591	VRS-CZ1JF474J		470k 1/16W Metal Oxide	AA
R592	VRS-CZ1JF682J		6.8k 1/16W Metal Oxide	AA
R593	VRS-CZ1JF682J		6.8k 1/16W Metal Oxide	AA
R594	VRS-CZ1JF103J		10k 1/16W Metal Oxide	AA
R595	VRS-CZ1JF272D		2.7k 1/16W Metal Oxide	AB
R596	VRS-CZ1JF153D		15k 1/16W Metal Oxide	AB
R597	VRS-CZ1JF244D		240k 1/16W Metal Oxide	AA
			(VL-E610S/E610H/E660S)	
R597	VRS-CZ1JF244F		240k 1/16W Metal Oxide	AA
			(VL-E96E/E98E)	
R598	VRS-CZ1JF103J		10k 1/16W Metal Oxide	AA
R599	VRS-CZ1JF471J		470 1/16W Metal Oxide	AA

MISCELLANEOUS PARTS

SC2	QSOCN1987TAZZ	Socket	AE
SC3	QSOCN1587TAZZ	Socket	AD

Ref. No.	Part No.	★	Description	Code
SC4	QSOCN1786TAZZ		Socket	AE
SC5	QSOCN0860TAZZ		Socket	AE
SC6	QSOCN2086TAZZ		Socket	AD
SC9	QSOCN1860TAZZ		Socket	AE
SLD3	PSLDM3321TAFW		Shield	AD
SLD4	PSLDM3322TAFW		Shield	AD

RAMP-0017TAN1 HEAD AMP UNIT

INTEGRATED CIRCUIT

IC301	VHiAN3358SH-1	H/A IC	AQ

TRANSISTORS

Q301	VSUMG2/////-1	Transistor	AC
	or		
	VSXP1213///-1	Transistor	AB
Q341	VS2SB709A/Q1E	Transistor	AC
Q342	VS2SB709A/Q1E	Transistor	AC
Q343	VSDTC144EE/-1	Transistor	AA
	or		
	VSUN9213///-1	Transistor	AA

COILS

L301	VP-NM220K1R0N	Peaking 22µH 10%	AB
	or		
	VPAXM220KR88N	Peaking 22µH 10%	AC
L341	VPABM100J2R6N	Peaking 10µH 5%	AC
	or		
	VPAWM100J2R6N	Peaking 10µH 5%	AC
L342	VPABM101J160N	Peaking 100µH 5%	AC
	or		
	VPAWM101J140N	Peaking 100µH 5%	AC

CAPACITORS

C305	VCKYCY1HF103Z	0.01µF	50V	Ceramic	AA
C306	VCCCCY1HH820J	82pF	50V	Ceramic	AA
C307	VCCCCY1HH820J	82pF	50V	Ceramic	AA
C308	VCKYCY1HF103Z	0.01µF	50V	Ceramic	AA
C309	VCKYCY1CF104Z	0.1µF	16V	Ceramic	AA
C310	VCKYCY1CF104Z	0.1µF	16V	Ceramic	AA
C311	VCKYCY1HF103Z	0.01µF	50V	Ceramic	AA
C312	VCKYCY1HF103Z	0.01µF	50V	Ceramic	AA
C313	VCSATE1AJ226M	22µF	10V	Tantalum	AD
C314	VCKYCY1HF103Z	0.01µF	50V	Ceramic	AA
C320	VCKYCY1HF103Z	0.01µF	50V	Ceramic	AA
C321	VCKYCY1HF103Z	0.01µF	50V	Ceramic	AA
C340	VCCCCY1HH101J	100pF	50V	Ceramic	AA
C341	VCCCCY1HH151J	150pF	50V	Ceramic	AA
C342	VCCCCY1HH101J	100pF	50V	Ceramic	AA
C344	VCKYCY1CF104Z	0.1µF	16V	Ceramic	AA
C345	VCKYCY1CF104Z	0.1µF	16V	Ceramic	AA
C346	VCKYCY1HB102K	1000pF	50V	Ceramic	AA
C349	VCCCCY1HH680J	68pF	50V	Ceramic	AA
C350	VCKYCY1HF103Z	0.01µF	50V	Ceramic	AA
C351	VCKYCY1HF103Z	0.01µF	50V	Ceramic	AA
C352	VCCCCY1HH680J	68pF	50V	Ceramic	AA

RESISTORS

R302	VRS-CY1JF562J	5.6k	1/16W	Metal Oxide	AA
R303	VRS-CY1JF562J	5.6k	1/16W	Metal Oxide	AA
R310	VRS-CY1JF181J	180	1/16W	Metal Oxide	AA
R311	VRS-CY1JF120J	12	1/16W	Metal Oxide	AA
R312	VRS-CY1JF120J	12	1/16W	Metal Oxide	AA
R315	VRS-CY1JF392J	3.9k	1/16W	Metal Oxide	AA
R321	VRS-CY1JF472J	4.7k	1/16W	Metal Oxide	AA
R330	VRS-CY1JF472J	4.7k	1/16W	Metal Oxide	AA
R331	VRS-CY1JF102J	1k	1/16W	Metal Oxide	AA
R332	VRS-CY1JF561J	560	1/16W	Metal Oxide	AA
R333	VRS-CY1JF000J	0	1/16W	Metal Oxide	AA
R340	VRS-CY1JF680J	68	1/16W	Metal Oxide	AA
R342	VRS-CY1JF271J	270	1/16W	Metal Oxide	AA
R343	VRS-CY1JF221J	220	1/16W	Metal Oxide	AA
R344	VRS-CY1JF223J	22k	1/16W	Metal Oxide	AA
R345	VRS-CY1JF333J	33k	1/16W	Metal Oxide	AA
R350	VRS-CY1JF243J	24k	1/16W	Metal Oxide	AA
R351	VRS-CY1JF243J	24k	1/16W	Metal Oxide	AA
R352	VRS-CY1JF563J	56k	1/16W	Metal Oxide	AA
R353	VRS-CY1JF153J	15k	1/16W	Metal Oxide	AA
R398	VRS-CY1JF000J	0	1/16W	Metal Oxide	AA
R399	VRS-CY1JF000J	0	1/16W	Metal Oxide	AA

CONNECTERS

SC301	QSOCN0985TAZZ	Socket	AE
SC302	QSOCN1886TAZZ	Socket	AD
SC303	QSOCN1560TAZZ	Socket	AE
SC304	QSOCN0686TAZZ	Socket	AC
SC305	QCNCW7068TAZZ	Connector	AG
SC306	QSOCN1085TAZZ	Socket	AE

MISCELLANEOUS PART

	PSLDM0132ADG1	H/A Shield Case	AC

Ref. No.	Part No.	★	Description	Code

DUNTK2800PM00 CCD UNIT

INTEGRATED CIRCUITS

IC2	VHi24LC8BiN-1		24LC08BT-I/SN			AM

TRANSISTORS

Q1	VS2SC4627CD-1		Transistor			AB

CAPACITORS

C1	VCKYCY1HB102K	1000p	50V	Ceramic		AA
C2	VCCCCY1HH2R0C	2.0p	50V	Ceramic		AA
C3	VCKYTV1HF103Z	0.01	50V	Ceramic		AA
C4	VCCCCY1HH221J	220p	50V	Ceramic		AA
C5	VCKYTQ1CF225Z	2.2	16V	Ceramic		AB
C6	VCKYCY1HF103Z	0.01	50V	Ceramic		AA

RESISTORS

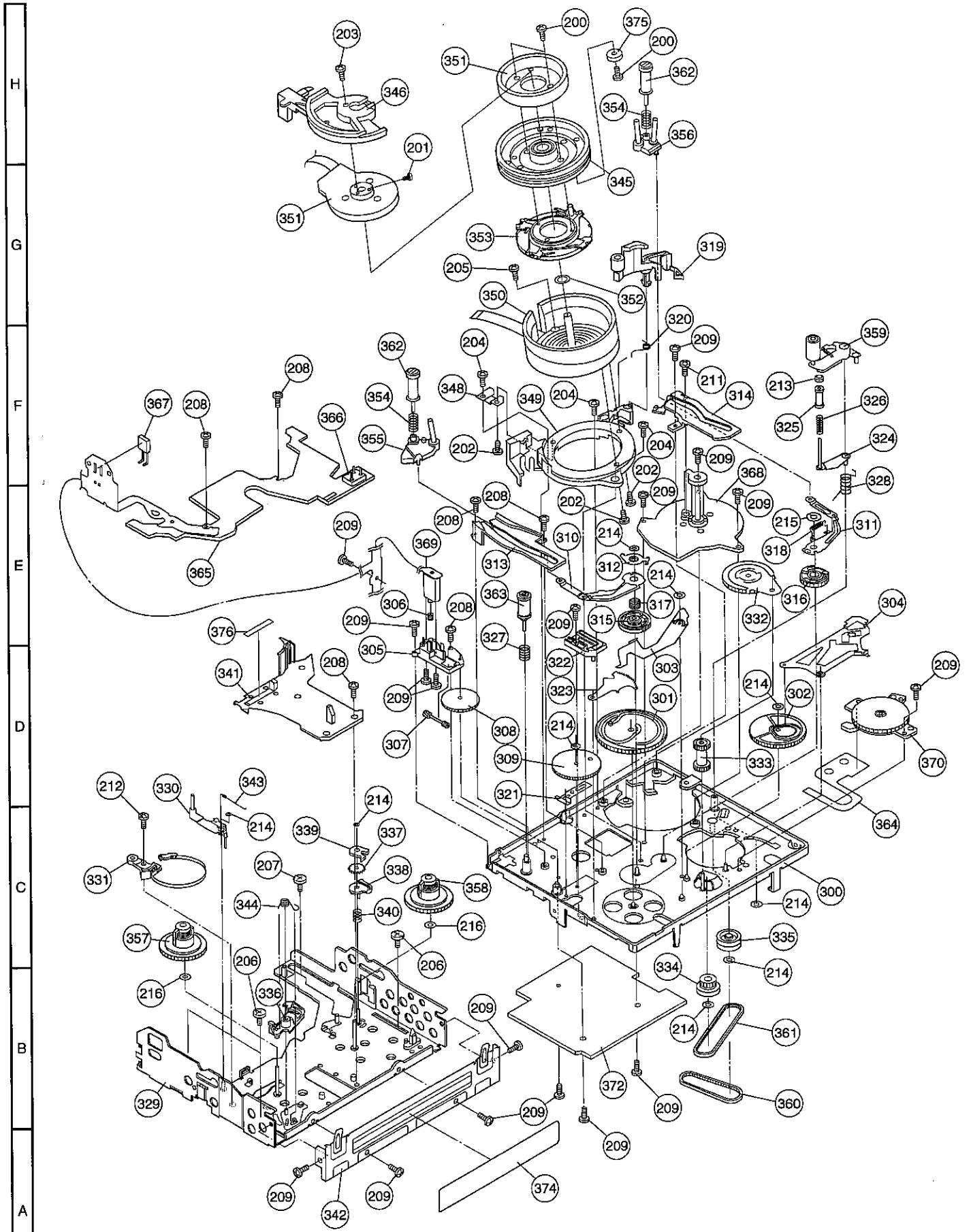
R1	VRS-CY1JF105J	1.0M	1/16W	Metal Oxide		AA
R2	VRS-CY1JF101J	100	1/16W	Metal Oxide		AA
R3	VRS-CY1JF472J	4.7k	1/16W	Metal Oxide		AA
R4	VRS-CY1JF101J	100	1/16W	Metal Oxide		AA
R5	VRS-CY1JF105J	1.0M	1/16W	Metal Oxide		AA

MISCELLANEOUS PARTS

SC1	QSOCN1986TAZZ		Socket			AF

—— End of PWB Assemblies' Parts ——

MECHANISM CHASSIS EXPLODED VIEW



MECHANISM PARTS

Ref. No.	Part No.	★	Description	Code
300	LCHSM0163GEZZ		Main Chassis Ass'y	AW
301	NGERH1280GEZZ		Main Cam	AD
302	NGERH1281GEZZ		Sub-Cam	AD
303	MLEVF0470GEFW		Eject Lever	AD
304	MLEVF0492GEFW		M Function Lever	AF
305	LHLDZ1966GEZZ		L Block Holder	AD
306	NGERW1064GEZZ		Worm Pulley	AC
307	NGERW1065GEZZ		Worm	AD
308	NGERH1282GEZZ		Worm Wheel	AC
309	NGERH1283GEZZ		Lo Relay Gear	AC
310	MARMM0126GEZZ		S Lo Arm Ass'y	AE
311	MARMM0128GEZZ		T Lo Arm Ass'y	AF
312	LANGA0069GEFW		S Lo Arm Retainer	AD
313	PGiDM0146GEZZ		Sup Rail	AD
314	PGiDM0147GEZZ		Tu Rail	AD
315	NGERH1284GEZZ		Sup Lo Gear	AC
316	NGERH1285GEZZ		Tu Lo Gear	AC
317	MSPRD0167GEZZ		S Lo Arm Double-Acting Spring	AE
318	MSPRT0407GEZZ		T Lo Arm Double-Acting Spring	AC
319	MLEVP0283GEZZ		HC Lever Ass'y	AF
320	MSPRD0168GEZZ		HC Double-Acting Spring	AC
321	MSLiF0074GEFW		Ten Arm Operation Lever	AD
322	PGiDM0148GEZZ		Ten Arm Guide	AC
323	NGERH3045GEFW		Segment Gear	AD
324	MLEVF0472GEZZ		Tu Guide Ass'y	AC
325	PGiDP0027GEZZ		Tu Guide	AE
326	MSPRC0183GEZZ		Tu Guide Spring	AA
327	MSPRC0184GEZZ		Si Roller Spring	AA
328	MSPRC0208GEZZ		Tu Guide Lever Spring	AC
329	CCHSS0045GE01		Slide Chassis Ass'y	AX
330	MLEVF0495GEZZ		Ten Arm Ass'y	AC
331	LBNDK3021GEZZ		Ten Band Ass'y	AF
332	NiDR-0016GEZZ		Swing Gear Ass'y	AF
333	NGERH1286GEZZ		Driving Gear	AC
334	NGERH1287GEZZ		Pulley Gear	AD
335	NPLYV0157GEZZ		Relay Pulley	AD
336	MLEVP0284GEZZ		S Brake	AC
337	NGERH1288GEZZ		Tu Brake Gear	AC
338	MLEVP0285GEZZ		Tu Main Brake	AC
339	MLEVP0286GEZZ		Tu Sub-Brake	AC
340	MSPRD0169GEZZ		Tu Brake Spring	AD
341	LHLDZ1967GEZZ		Light Guide Holder Ass'y	AF
342	LANGG9102GEFW		Down Guide	AF
343	MSPRT0408GEZZ		Tension Spring	AD
344	MSPRD0170GEZZ		S Brake Spring	AD
345	CDRMU0032GE02		Upper Drum Ass'y	BF
346	PGiDM0154GEZZ		Tape Guide	AB
348	QBRSK0039GEZZ		Earth Spring	AD
349	PGiDM0143GEZZ		Drum Base	AG
350	DDRML0020HE01		Lower Drum Ass'y	AY
351	RMOTP1137GEZZ		Drum Motor	AS
352	PSPAQ0010GEZZ		Gap Adjusting Shim	AC
353	NRTR-0096GEZZ		R Tr Rotor Ass'y	AP
354	MSPRC0209GEZZ		Gr Adjusting Spring	AC
355	LPOLM0058GEZZ		S Pole Base	AK
356	LPOLM0059GEZZ		T Pole Base	AK
357	NDAiV1071GEZZ		Sup Reel Support	AG
358	NDAiV1072GEZZ		Tu Reel Support	AG
359	MLEVF0517GEZZ		Pinch Lever Ass'y	AS
360	NBLTT0012GEZZ		Timing Belt S	AE
361	NBLTT0013GEZZ		Timing Belt L	AE
362	NROLP0108GEZZ		Guide Roller Ass'y	AG
363	NROLP0109GEZZ		Si Roller Ass'y	AH
364	QPWBH5428GEZZ		Mode FPC	AG
365	CPWBN5402GE01		Sensor Ass'y	BC
366	QSW-M0042GEZZ		Recognition SW	AH
367	RDTCH0037GEZZ		Dew Sensor	AF
368	RMOTV1019GEZZ		Cap. Motor	AZ
369	RMOTM1075GEZZ		Load. Motor	AL
370	QSW-R0038GEZZ		Mode SW	AG
372	RAMP-0017TAN0		H/A PWB	AY
374	TLABH0196TAZZ		Caution Label	AB
375	PSHEM0014GEZZ		Counter Balance	AC
376	PSHEP0013GEZZ		Interruption Sheet	AC
200	XAPSF17P03200		Screw M1.7x3.2	AA
201	LX-XZ3036GEFP		Screw M2.0x6.0	AD
202	LX-BZ3175GEFN		Screw M1.7x4.0	AC
203	LX-BZ3163GEFN		Screw M1.7x2.5	AC
204	LX-HZ3074GEFN		Screw M1.7x5.3 S Tight	AA
205	LX-BZ3177GEFF		Screw M1.4x1.5	AB
206	LX-HZ3132GEFF		Screw M1.4x1.5xD3.5	AB
207	LX-BZ3178GEZZ		Screw M1.4x1.5xD4.0	AD
208	LX-HZ3083GEFF		Screw M1.4x2.5 S Tight	AB
209	LX-HZ3077GEFN		Screw M1.4x3.0 S Tight	AA
211	LX-HZ3084GEFF		Screw M1.4x4.0 S Tight	AC
212	LX-HZ3085GEFD		Screw M1.4x4.0 SW S Tight	AD
213	LX-NZ3053GEZZ		Screw M1.4 Nut	AC
214	LX-WZ1076GE02		Washer D0.8xD3.0x0.2t Plastics	AA
215	LX-WZ1075GE02		Washer D2.1xD5.0x0.25t Plastics	AA
216	XWHJZ12-02040		Washer D1.2xD4.0x0.25t Plastics	AC

—— End of Mechanism Parts ——

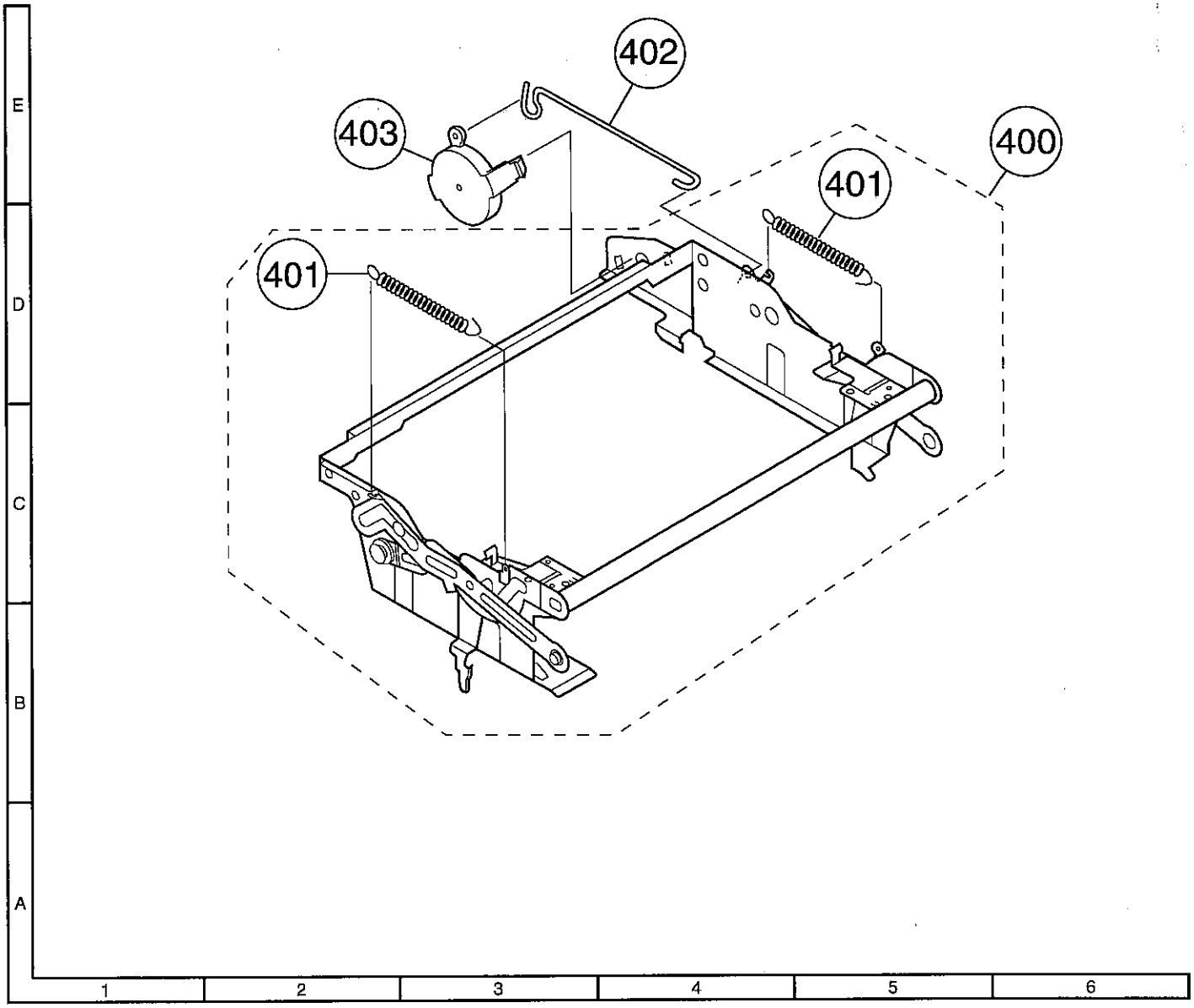
Ref. No.	Part No.	★	Description	Code

CASSETTE HOUSING PARTS

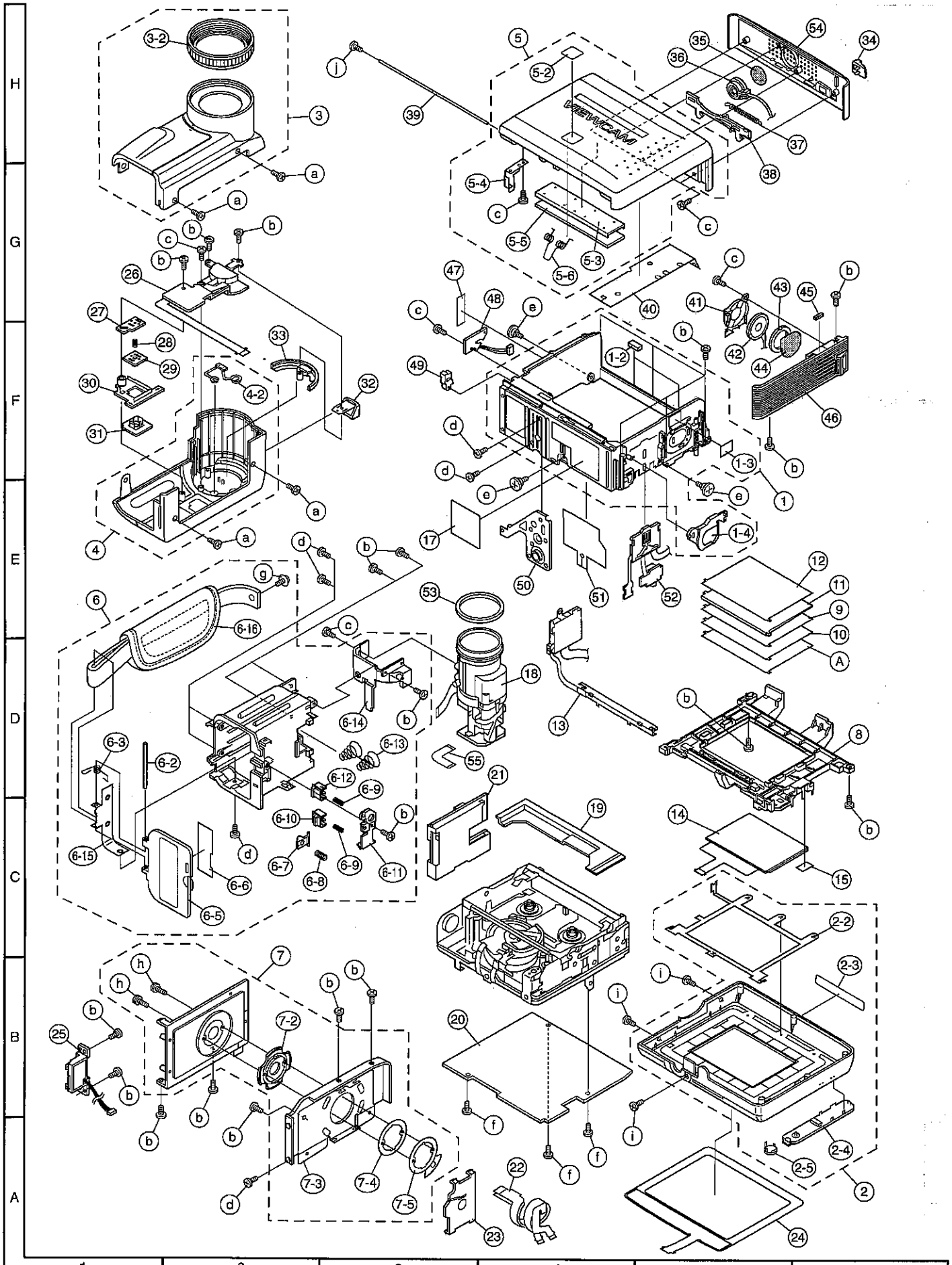
400	CHLDX3077GE01	Cassette Compartment Assy	AY
401	MSPRT0414GEZZ	Up Main Spring	AD
402	MROD-0014GEFJ	Damper rod	AG
403	PDMP-0013GEZZ	Cassette Compartment Damper	AG

—— End of Cassette Housing Parts ——

CASSETTE HOUSING CONTROL UNIT



CABINET EXPLODED VIEW



CABINET PARTS

Ref. No.	Part No.	★	Description	Code
1	DCABA6183TAK1		V Frame Service	AL
1-2	PSPAG0095TAZZ		VCR Lid Cushion	AA
1-3	TLABH0355TAZZ		Lithium Exchange Label	AB
1-4	LHLDB1027TAZZ		Lithium Holder	AD
2	DCABB6183TAK1		L Cabinet Service	AS
2-2	QEARP0233TAZZ		LCD Earth Sheet	AE
2-3	TLABH0318TAZZ		Facing Recording Caution Label	AB
2-4	GCOVH1226TASA		Jack Cover	AD
2-5	GCOVA1535TAZZ		Remote Control Receptor Cover	AD
3	CCABC6090TAK1		Camera Front Cabinet Ass'y	AU
3	CCABC6091TAK1		Camera Front Cabinet Ass'y (VL-E98E)	AU
3	CCABC6093TAK1		Camera Front Cabinet Ass'y (VL-E660S)	AU
3-2	GCOVA1539TASA		Lens Hood	AM
4	DCABD6090TAK1		Camera Rear Cabinet Ass'y	AT
4	DCABD6088TAK1		Camera Rear Cabinet Ass'y (VL-E98E)	AV
4-2	JBTN-0276TASA		Camera Button	AD
5	DFTAC1259TAK1		VCR Lid Service (VL-E610S/H)	AT
5	DFTAC1265TAK1		VCR Lid Service (VL-E96E/EX/EW/ER)	AU
5	DFTAC1258TAK2		VCR Lid Service (VL-E660S)	AT
5	DFTAC1266TAK1		VCR Lid Service (VL-E98E/EX/EW/ER)	AU
5-2	HBDGS0056TASA		LCD Badge	AE
5-3	LANGK0428TAFW		VCR Lid Reinforcing Angle	AG
5-4	LANGK0400TAFW		Eject Fitting	AD
5-5	PSPAZ0193TAZZ		VCR Lid Sheet	AC
5-6	MSPRD0047TAFJ		VCR Lid Spring	AD
6	CCOVA1536TAK3		KS Side Cover	AV
6-2	NSFTZ0049TAFW		Battery Lid Axle	AC
6-3	MSPRD0050TAFJ		Battery Lid Spring	AC
6-5	GFTAB1066TAKA		Battery Lid	AE
6-6	HDECP0045TASA		Battery Decoration Plate	AC
6-7	LHLDZ1448TA00		Battery Intermediate Lock	AC
6-8	MSPRC0103TAFJ		Battery Intermediate Lock Spring	AD
6-9	MSPRC0102TAFJ		Battery Lock Lever Spring	AA
6-10	MLEVP0030TASA		Battery Lid Open/Close Lever	AC
6-11	LHLDZ1449TAZZ		Battery Lock Holder	AC
6-12	MLEVP0029TASA		Battery Lock Lever	AC
6-13	MSPRC0101TAFJ		Battery Push-out Spring	AD
6-14	LHLDZ1445TAZZ		Lens Holder	AD
6-15	LANGK0398TA00		Battery Lid Angle Fitting	AH
6-16	UBNDT0104TAZZ		Hand Strap	AM
7	DCOVA1538TAK1		Tilt Ass'y	AU
7-2	PSPAZ0190TAZZ		Tilt Spacer	AE
7-3	GCOVA1537TAKA		Tilt Frame V	AL
7-4	PSPAZ0189TAZZ		Rotation Spacer	AD
7-5	LANGH0071TAFW		Stopper Fitting	AD
8	LHLDZ1446TAZZ		LCD Holder	AG
A	PSHEP0044TAZZ		Reflection Polarizing Sheet	AG
9	PSHEP0045TAZZ		Diffusion Sheet	AD
10	PSHEP0044TAZZ		Prism Sheet	AG
11	PGIDM0025TAZZ		Light Guide Plate	AG
12	PMIR-0021TAZZ		Reflection Sheet	AC
13	CLMPV0031TA01		Lamp Inverter Unit	BA
14	CPNLC0032RM01		LCD Panel	BZ
15	PZETV03A3TAZZ		LCD Glass Retaining	AA
17	TLABM1822TAZZ		Model Label(VL-E610S)	AD
17	TLABM1823TAZZ		Model Label(VL-E610H)	AD
17	TLABM1827TAZZ		Model Label(VL-E660S)	AD
17	TLABM1824TAZZ		Model Label(VL-E96E)	AD
17	TLABM1825TAZZ		Model Label(VL-E96EX)	AD
17	TLABM1845TAZZ		Model Label(VL-E96EW)	AD
17	TLABM1826TAZZ		Model Label(VL-E96ER)	AD
17	TLABM1847TAZZ		Model Label(VL-E98E)	AD
17	TLABM1828TAZZ		Model Label(VL-E98EX)	AD
17	TLABM1848TAZZ		Model Label(VL-E98EW)	AD
17	TLABM1829TAZZ		Model Label(VL-E98ER)	AD
18	CLNSA0127TA01		Lens Unit	BS
19	GFTAC1241TASA		Cassette Compartment Cover	AD
20	DUNTK2783QA00		VCR Unit(VL-E610S)	—
20	DUNTK2783QA01		VCR Unit(VL-E610H)	—
20	DUNTK2783QA02		VCR Unit(VL-E96E)	—
20	DUNTK2783QA03		VCR Unit(VL-E660S)	—
20	DUNTK2783QA05		VCR Unit(VL-E98E)	—
21	DUNTK2785QA03		Camera Unit (VL-E610S/E610H)	—
21	DUNTK2785QA04		Camera Unit(VL-E96E)	—
21	DUNTK2785QA05		Camera Unit(VL-E660S)	—
21	DUNTK2785QA06		Camera Unit(VL-E98E)	—
22	QPWBH2814TAZZ		Tilt FPC	AQ

Ref. No.	Part No.	★	Description	Code
23	LHLDW1038TA00		FPC Holder	AC
24	QSW-Z0286TAZZ		VCR Operation Unit	AR
25	QTANZ0129TAZZ		Battery Terminal Unit	AG
26	QSW-Z0285TAZZ		Power Unit	AR
27	LHLDZ1452TAZZ		Power Lock Holder	AC
28	MSPRC0083TAFJ		Power Lock Spring	AA
29	JBTN-0277TASA		Power Button	AD
30	LHLDZ1451TAZZ		Power Holder	AC
31	JKNBP0152TASA		Power Knob	AD
32	JKNBP0153TASA		Zoom Knob	AD
33	LHLDZ1453TASA		Zoom Knob Holder	AD
34	JKNBP0154TASA		Open Knob	AC
35	PSPAZ0191TAZZ		Spacer	AA
36	RMICC0079TAZZ		Microphone	AM
37	MSPRT0034TAFJ		Lid Lock Spring	AC
38	LHLDZ1454TA00		VCR Lid Lock	AD
39	NSFTZ0084TAFW		VCR Lid Shaft	AD
40	PSPAZ0192TAZZ		Microphone Lead Spacer	AD
41	LHLDZ1450TAZZ		Speaker Holder	AC
42	VSP0020P-94WN		Speaker	AL
43	PSPAG0103TAZZ		Speaker Spacer	AC
44	PCOVP9062TAZZ		Speaker Mesh	AB
45	PSPAG0095TAZZ		VCR Lid Cushion	AA
46	GCOVA3056TAKA		Speaker Cover	AE
47	ZTAPEP069020E		Tape	—
48	QSW-Z0284TAZZ		Turn/Eject SW	AH
49	MLEVP0031TAZZ		Eject Lever	AC
50	LANGK0399TAFW		Tripod Angle Ass'y	AK
51	PSHEP0074TAZZ		Microphone Lead Sheet	AB
52	RRMCK0034TAZZ		Jack Unit	AT
53	PSPAG0084TA00		Front Group Frame Rubber	AD
54	GCOVA3057TAKA		Microphone Cover	AG
55	QPWBH2815TAZZ		CCD FPC	AS
a	LX-HZ0018TAFN		M2x6 Tapping, Silver	AA
b	LX-HZ0018TAFF		M2x6 Tapping, Black	AA
c	LX-HZ0045TAFN		M2x4 Tapping, Silver	AA
d	XiPSF20P04000		M2x4 Small Screw, Black Zinc Plating	AA
e	LX-BZ0191TAFD		M2 Special Screw	AC
f	XiPSD20P03000		M2x3 Screw	AA
g	LX-UZ0016TAFD		M2x5 Special Screw	AA
h	LX-BZ0200TAFD		M2x7 Special Screw	AB
i	XiPSN20P04000		M2x4 Small Screw, Silver	AA
j	LX-HZ0063TAFC		M1.7x6 Tapping, Silver	AA

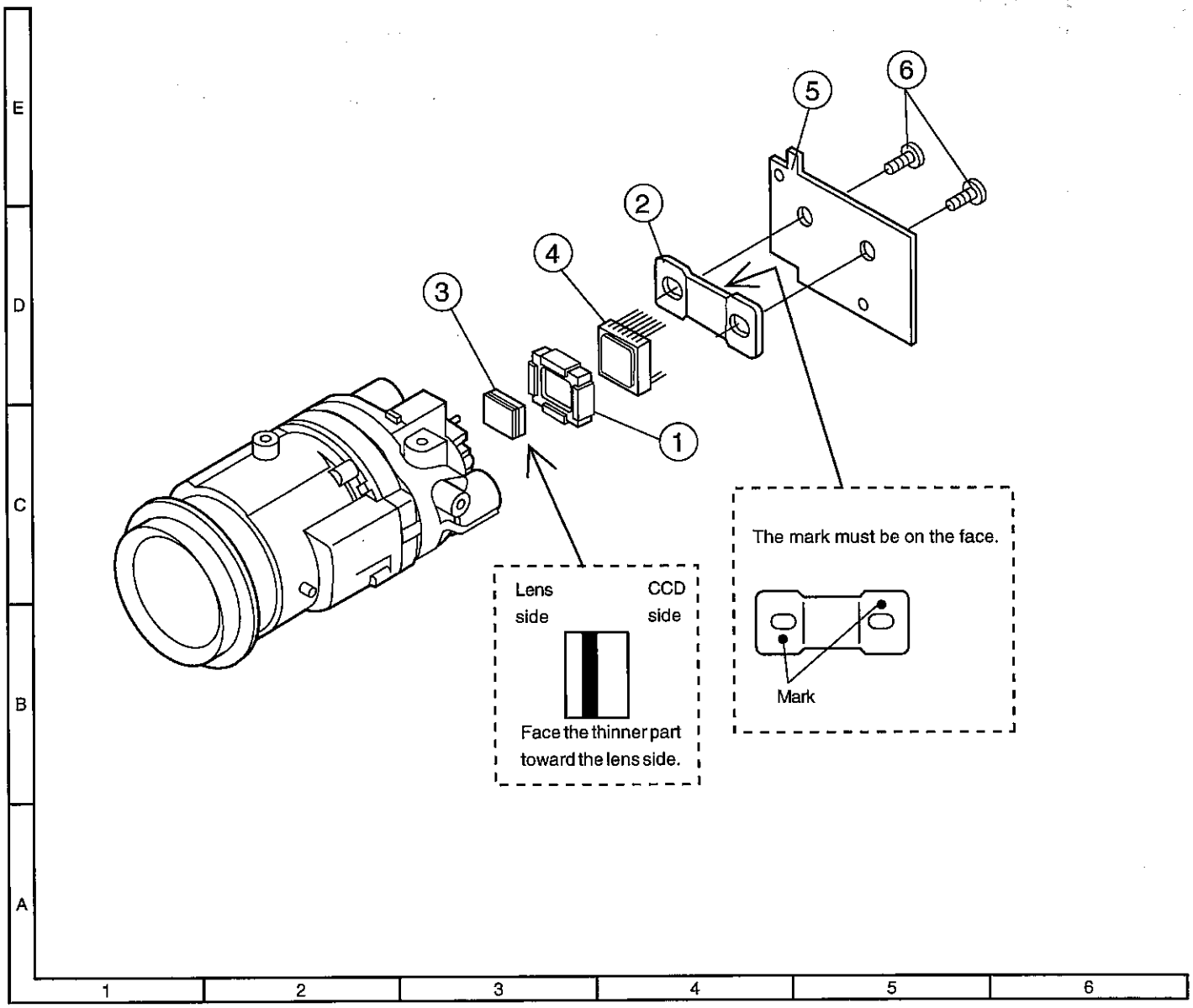
—— End of Cabinet Parts ——

Ref. No.	Part No.	★	Description	Code

CAMERA UNIT PARTS

1	PCOVM8016TA00	Dustproof Rubber	AC
2	LANGK0324TAFW	CCD Retaining Plate	AG
3	PFiLW0060TAZZ	Optical Filter	AS
4	VHiLZ2423H5-1	CCD Sensor	BD
5	DUNTK2800PM00	CCD PWB Unit	—
6	LX-HZ0013TAFF	Screw (1.7 X 6)	AA

—— End of Camera Unit Parts ——



SUPPLIED ACCESSORIES

Ref. No.	Part No.	★	Description	Code
			ACCESSORIES	
	GCOVH1225TASA		Lens Cap	AG
	GCOVH1234TAZZ		Sun Hood (VL-E610S/H, VL-E660S, VL-E96EX, VL-E98EX)	AV
	UBNDS0010TASA		Shoulder Strap	AH
	TINSE0154TAZZ		Operation Manual(VL-E610H)	AA
	TINSE0293TAZZ		Operation Manual(VL-E610H)	AH
	TINSE0297TAZZ		Operation Manual(VL-E610H)	AD
	TINSL0110TAZZ		Operation Manual(VL-E610S)	AU
	TINSL0111TAZZ		Operation Manual(VL-E610S)	AU
	TINSL0112TAZZ		Operation Manual(VL-E660S)	BA
	TINSL0113TAZZ		Operation Manual(VL-E660S)	BA
	TINSL0118TAZZ		Operation Manual(VL-E96E)	AZ
	TINSL0120TAZZ		Operation Manual(VL-E98E)	BA
⚠	QACCB0016TAZZ		AC Cable(VL-E610H)	AV
⚠	QACCL0002TAZZ		AC Cable (VL-E610S/E660S/E96E/E98E)	AM
⚠	QACCL0020TAZZ		AC Cable (VL-E96EX, VL-E98EX)	AP
	QCNW-1338TA00		DC Cable	AR
	QCNW-1448TAZZ		A/V Cable	AH
	QPLGA0010GEZZ		AC Plug(VL-E96E/E98E)	AF
	RRMCG0022TASA		Infrared Remote Control (VL-E96E/E98E)	AR
	RRMCG0054TASA		Infrared Remote Control (VL-E610S/E610H/E660S)	AR
	UADP-0280TAZZ		AC Adaptor	—
	UADP-0281TAZZ		AC Adaptor(VL-E610H)	—
	UBATM0011TAZZ		Battery	BC
	UBATL0006TAZZ		Lithium Battery	AF
			ACCESSORIES(NOT REPLACEMENT ITEM)	
	TGANE0057TAZZ		Guarantee Card(VL-E610H)	—
	TGANL0004TAZZ		Guarantee Card (VL-E610S/E610H/E660S)	—

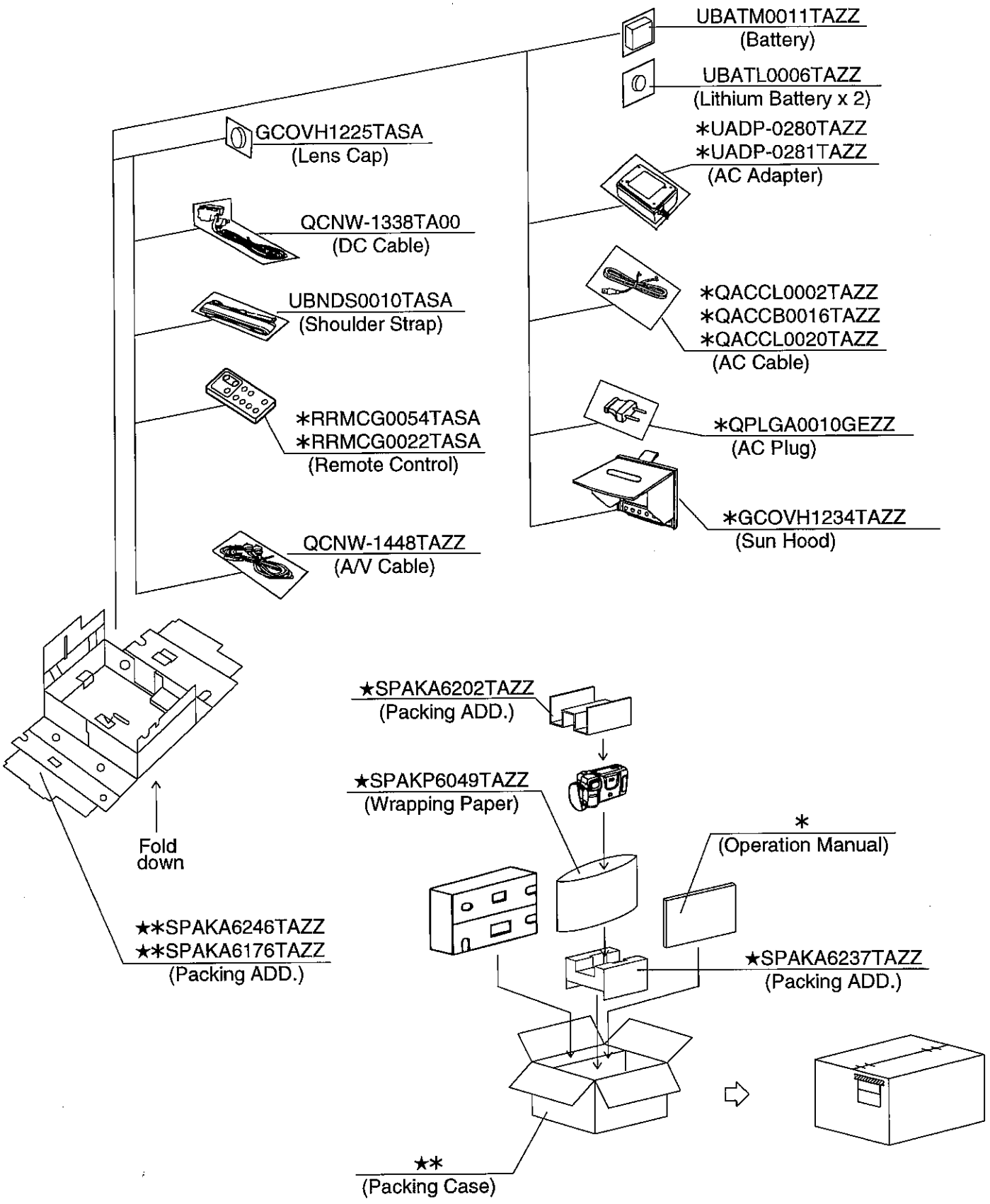
—— End of Supplied Accessories ——

PACKING PARTS (NOT REPLACEMENT ITEM)

Ref. No.	Part No.	★	Description	Code
	SPAKC6813TAZZ		Packing Case(VL-E610S)	—
	SPAKC6814TAZZ		Packing Case(VL-E660S)	—
	SPAKC6821TAZZ		Packing Case(VL-E610H)	—
	SPAKC6822TAZZ		Packing Case(VL-E96E)	—
	SPAKC6823TAZZ		Packing Case(VL-E96EW)	—
	SPAKC6825TAZZ		Packing Case(VL-E98E)	—
	SPAKC6836TAZZ		Packing Case(VL-E96EX)	—
	SPAKC6837TAZZ		Packing Case(VL-E96ER)	—
	SPAKC6838TAZZ		Packing Case(VL-E98EX)	—
	SPAKC6839TAZZ		Packing Case(VL-E98ER)	—
	SPAKC6826TAZZ		Packing Case(VL-E96EW)	—
	SPAKP6049TAZZ		Wrapping Paper	—
	SSAKA0087TAZZ		Polyethylene Bag (VL-E610H/E96E/E98E)	—
	SSAKA0088TAZZ		Polyethylene Bag (VL-E610S/E660S)	—
	SPAKA6202TAZZ		Packing ADD.	—
	SPAKA6237TAZZ		Packing ADD.	—
	SPAKA6246TAZZ		Packing ADD. (VL-E610S/H, VL-E96EX VL-E660S, VL-E98EX)	—
	SPAKA6176TAZZ		Packing ADD. (VL-E96E/EW/ER, VL-E98E/EW/ER)	—

—— End of Packing Parts ——

11. PACKING OF THE SET



★ Not Replacement Item
∗ For detail, see page 10-23.

12. AC ADAPTER

UADP-0280TAZZ (VL-E610S/E96E/E98E/E660S) UADP-0281TAZZ (VL-E610H)

UNIT No.

Features

- Compact and light-weight design for easier portability.
- Automatic voltage change AC 110V to AC 240V allows the adapter usage even in your trips abroad.
- Charging function with battery pack.
- Rapid charging function to enable the charging in a shorter period of time.

Specifications

Power Requirement :	AC110-240V, 50/60Hz
DC Output :	DC4.5V
Power Consumption :	16W
Dimension (approx.) :	$2\ ^{31}/_{32}$" (W) × 2" (H) × $5\ ^{1}/_{8}$" (D)
	[75mm(W) X 51mm (H) X 130mm (D)]
Weight (approx.) :	220 g

*Specifications are subject to change without notice.

12-1. OPERATION MANUAL

12-1-1. Outline

This adapter is designed as a power supply for the camcorder as well as a quick charger for the battery used in the camcorder.
As shown in the block diagram (Figure 12-1-1), the adapter consists of a separately excited switching regulator which uses the control IC and a multi-functional circuit at the secondary side.
The primary side control section and the secondary side multi-functional circuit, composed mainly of surface mounted devices, are mounted in a small portable casing for portable uses.
Available input voltage is 110 to 240V (50/60 Hz), so that this handy unit can be carried around and used all over the world.
The basic operation is controlled by the section to perform constant voltage control (designed to compare the operating voltage with the secondary side reference voltage provided at a switching power supply), and constant current control, as well as by the timer for quick battery charging, various detecting circuits, and sequence control section. This unit, as an AC adapter, supplies constant voltage DC power through the 3-pin DC jack with a control terminal, and as a battery charger, the unit starts the quick charging when the specific battery is loaded with the DC plug unconnected.

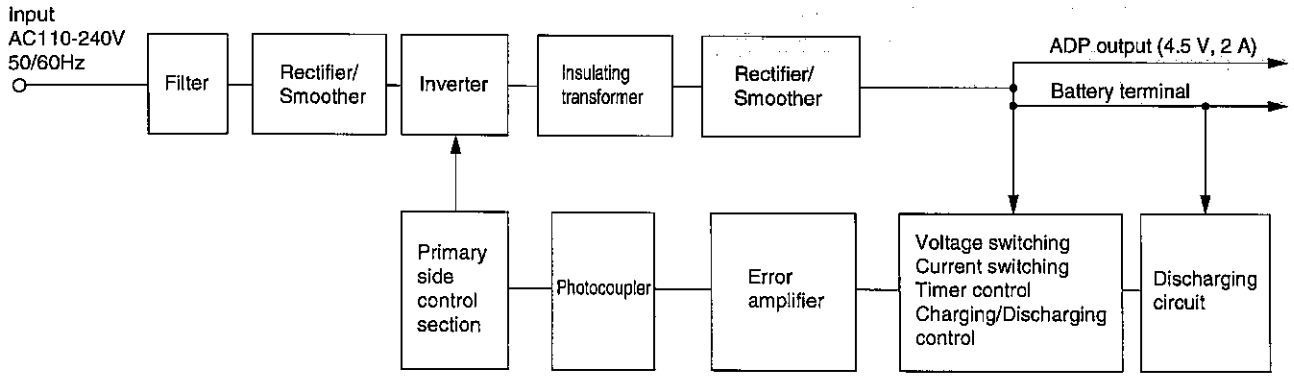


Fig. 12-1-1 Block diagram (Camcorder adapter)

12-1-2. Operation

1.Adapter mode
When the DC plug is attached to the adapter, the stable DC voltage (4.5V, 2A) is continuously supplied through the DC jack to operate camcorder.
The power consumption is kept constant over the whole control input range, regardless of input fluctuation.
The output is 1.3 or more times higher than rated current so that the unit can withstand transition accompanied by VCR starting current flow and rush current flow.
Also, for the adapter output, the overcurrent protector of specific characteristics ensuring power control against short-circuiting from outside is used to protect the adapter from being damaged or broken down. It also prevents the excessive heating inside the adapter.

2.Ni-Cd charge mode
This adapter, when Ni-Cd battery is attached, can be used as a quick charger. This charging operation has three operating modes which are switched successively.
The first stage is called the initial charging. A constant current 1.5A is used to charge within voltage limit (5.7V) and time limit (set by 10 min timer).
The voltage is limited in order to protect the battery against overvoltage and overcharge which may occur due to recharging of fully charged battery.
The time limit serves to prevent the charging error which may occur due to initial voltage drop of inactive battery.
The second stage is a quick charging. As with initial charging, 1.5A quick charge is performed within voltage limit (5.7V) and time limit set by the timer (180 minutes) which are different from those of the initial charging.
During quick charging, a voltage drop (-ΔV phenomenon) of the battery which occurs at the end of charging is detected, the charging is stopped, and the next stage is started.
When charging current is 1.5A, the 1500mAh battery, and the under-mentioned 2700mAh nickel-hydrogen battery are fully charged for about 60 minutes and about 140 minutes, respectively.

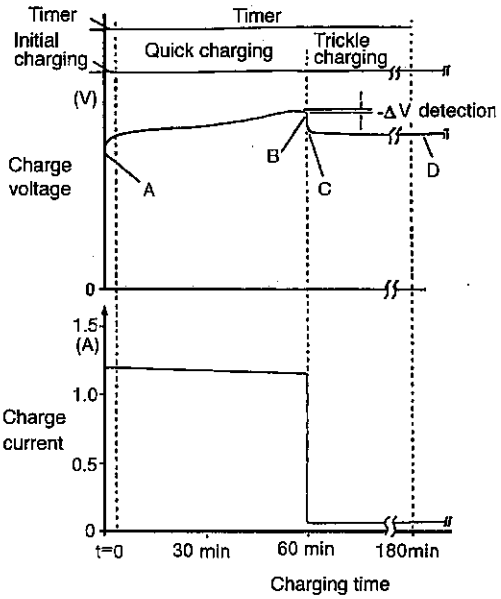


Fig. 12-1-2 Charging characteristics In case of 1500mAh Ni-Cd battery

The timer is set to 180 minutes time limit to avoid overcharge which may be caused by -ΔV detection error.
Here, -ΔV detection is set to 40 to 80mV.
The third stage is trickle charging. In this mode, the fully charged state is kept even after the quick charging is completed.
The trickle charging is generally set at 1/30 to 1/40C depending on the characteristics of battery. This adapter adopts the charging system which is controlled by the constant voltage control operation output and fixed resistance.
These charging stages are shown in Figure 12-1-2.

3.Nickel-hydrogen battery charging mode
When the nickel-hydrogen battery is attached to the adapter to which the DC plug is not attached, existence of T terminal is detected, and the quick charging of nickel-hydrogen is started.
The charging of the nickel-hydrogen battery has five operating modes. These modes are switched successively.
When the nickel-hydrogen battery is attached, the pre-charging is performed at first.
In this mode, it is charged with a constant current (about 0.5A), and the mode is switched to the next mode after 2 minutes.
Since this period is provided to activate the battery, the completion of charging is not detected. Only the battery protection functions such as overvoltage detection, abnormal temperature detection, etc. are available here.

The next operation is the initial charging as in case of Ni-Cd battery.
Differing from the Ni-Cd battery, the limit voltage of the overvoltage detection is 5.7V and an abnormal temperature detection function is provided.

The third stage is the quick charging mode, which is equivalent to the quick charging of the Ni-Cd battery.
The phenomenon detection function in this mode and the mode shift due to detection are as follows:

I) -ΔV detection
If battery voltage -ΔV (22 to 62mV) is detected, the mode is switched to the trickle charge mode.

II) Overvoltage detection
Excess of battery voltage over 5.7V is judged to be abnormal, and the mode is switched to the trickle charge mode.

III) ΔT detection
If the gradient of temperature rise of the charging battery exceeds 1°C/min., it is judged that the charging is completed soon and the mode is switched to the sub-charging mode.

IV) Abnormal temperature detection
If the battery temperature reaches 60°C to 65°C during charging, charging is stopped to protect the battery, and the mode is switched to the trickle charging mode.

V) Timer operation
When 180 minutes elapse after start of quick charging, the mode is switched to the sub-charging mode.

In the sub-charging mode which is set due to ΔT detection and timer operation in the quick charging mode, constant current (about 0.5A) charging is performed as with the pre-charging mode.
At this time, the mode is switched by -ΔV detection function, overvoltage detection function and abnormal temperature detection function as in case of quick charging. But the mode is switched to the sub-charging mode by the built-in timer when one hour elapses after the pre-charging is started.

As with the Ni-Cd battery, the trickle charging current is supplied at the constant voltage and fixed resistance in the trickle charging mode (fifth stage).

12-1-3. Circuits

The circuits used for the adapter are explained according to the circuit diagram.

1.Input section
The input section consists of noise filter and condenser input rectifying smoothing circuit. The noise filter, which consists of L1, C1, C50 and C51 reduces common mode noise.
R1 and R2 are discharging resistors which are intended to eliminate voltage from the input plug when the power is turned off.
The rush current which is caused when the power is turned on is greatly limited by R3, DCR of L1 and the operating resistor of D1.

2.Switching section
The switching circuit drives the transistor Q1 to act as a switch by using the DC voltage rectified through C2 corresponding to the signals sent from the primary side control section. It and the transformer T1 comprise a high-frequency inverter.

3.Primary side control section
This section drives the switching section by converting the pulse width of the signal sent from the secondary side control circuit through the photocoupler.
The control IC (IC1) is used to drive Q1 (Mos FET).
This IC, as an overvoltage protector, contains a function which stops oscillation when it detects the overvoltage at D7.

4.Output circuit section
For the secondary side output, a popular on-off system is applied. Ripples and common mode noise are reduced through the chokes of L2 and L3.
Q102 is a transistor for the charging switch. It is turned on through Q103 by the output of pin 6 of IC101 during quick charging and pre-/sub-charging.

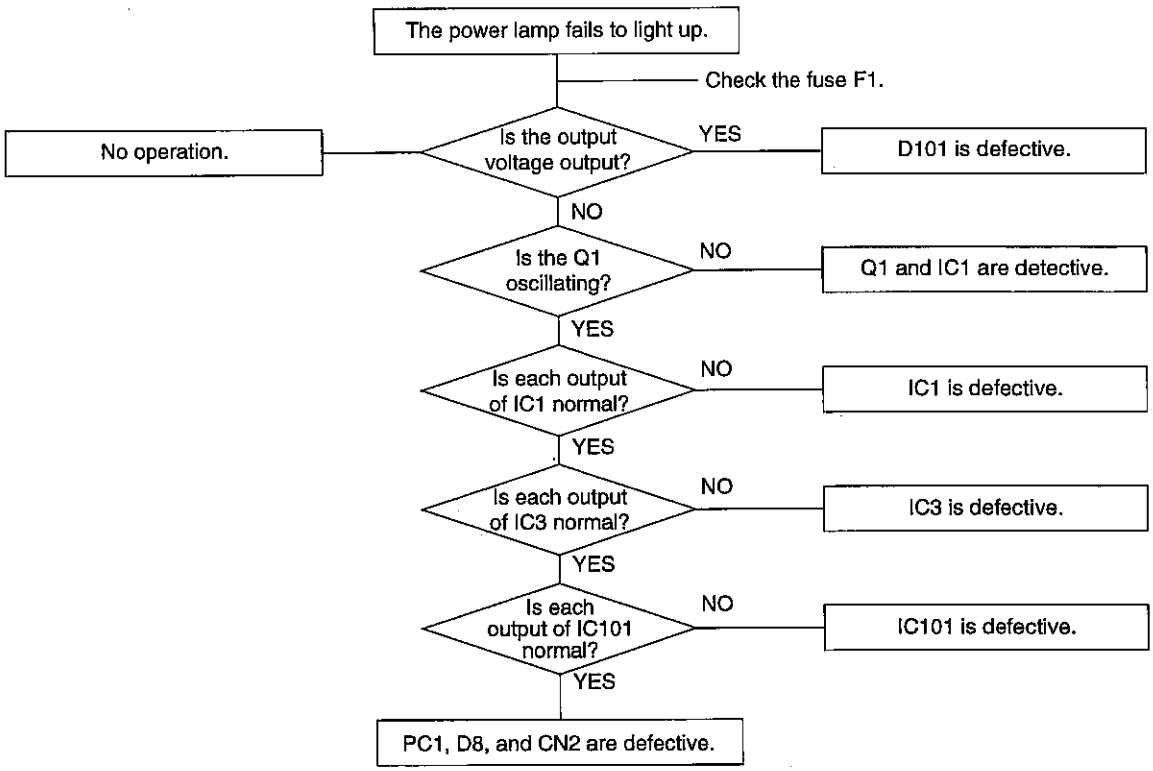
5.Battery detection circuit
When the battery is installed, Q101 is turned on by the battery voltage.
If the DC plug is not attached to CN2 at this time, the GND level will be input to the pin 11 of IC101 by the transistor Q104 in order to detect the installation of the battery.

6.Secondary side control circuit
The function of the secondary side control section is to control the switching section by error-amplifying the detected output voltage and current and transmitting the signals to the primary side control circuit through the photocoupler.
The constant voltage is set and detected in IC3-II, whereas the adapter mode (4.5V)/charge mode (6.5V) selection is made by changing the reference voltage through the voltage switching operation of pin 5 of IC3.
The overcurrent protection in the adapter mode is performed by the primary side control section.
IC2 has the constant voltage power function to provide drive power for IC101 and the reference voltage for IC3, as well as the reset function to prevent IC101 errors.
The constant voltage output of IC2 is used as a reference voltage when error amplifying of output voltage/current.

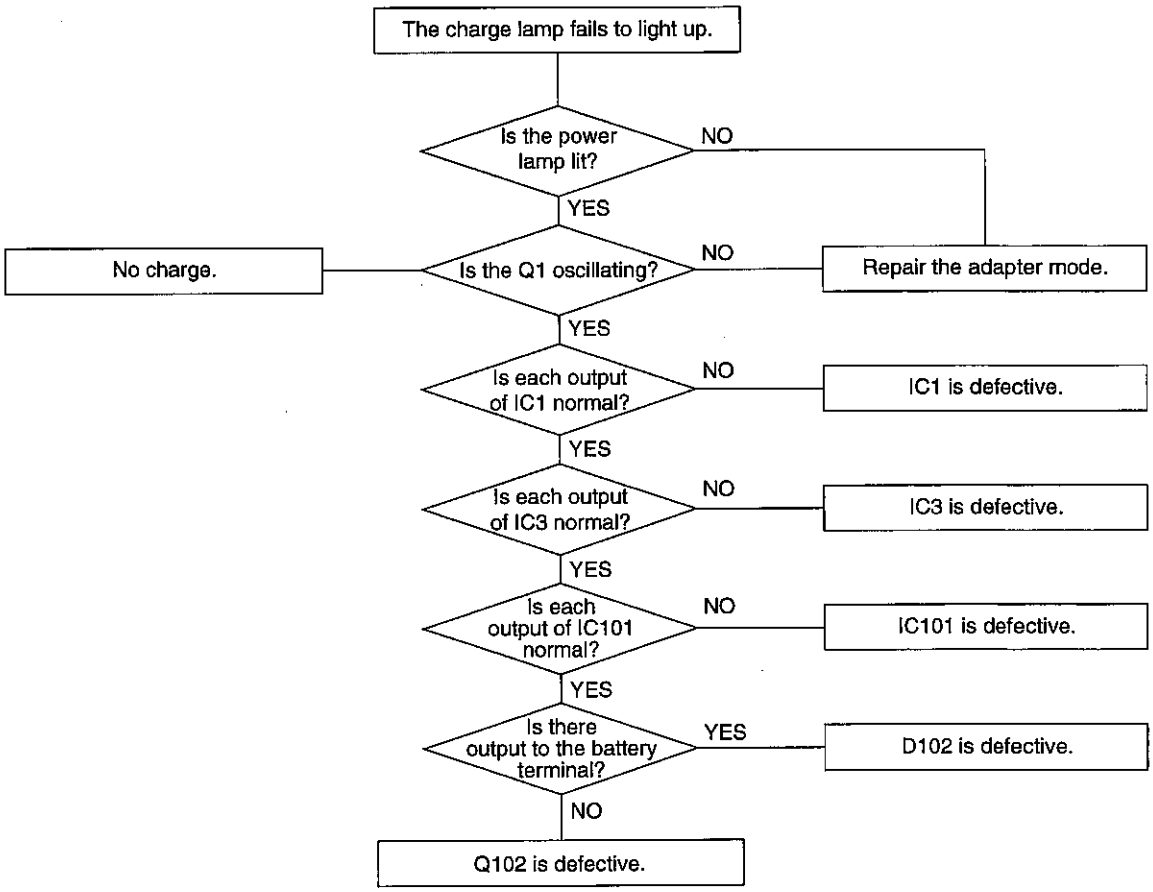
7.Display
Only the D101 (red LED) lights up in the adapter mode.
In the charge mode, D102 (orange LED) lights up together with D101 during quick charging. When quick charging is completed (in the trickle mode), only D102 goes out.
D102 on-off is controlled through the pin 5 of IC101.

TROUBLE SHOOTING

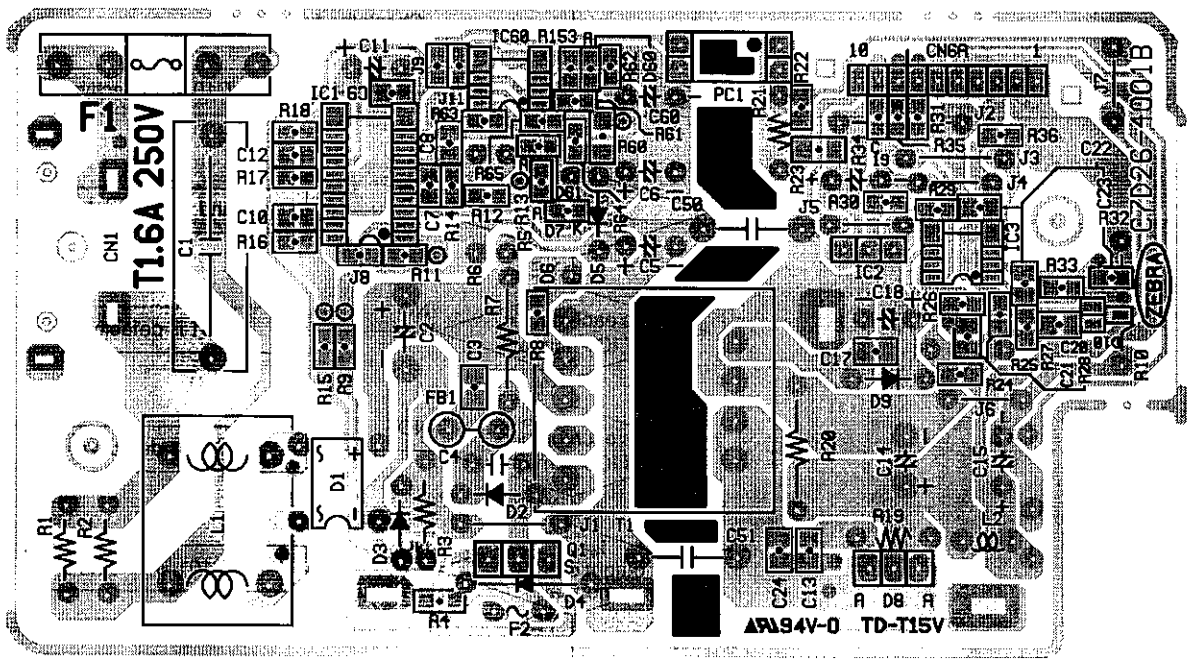
Adapter Mode

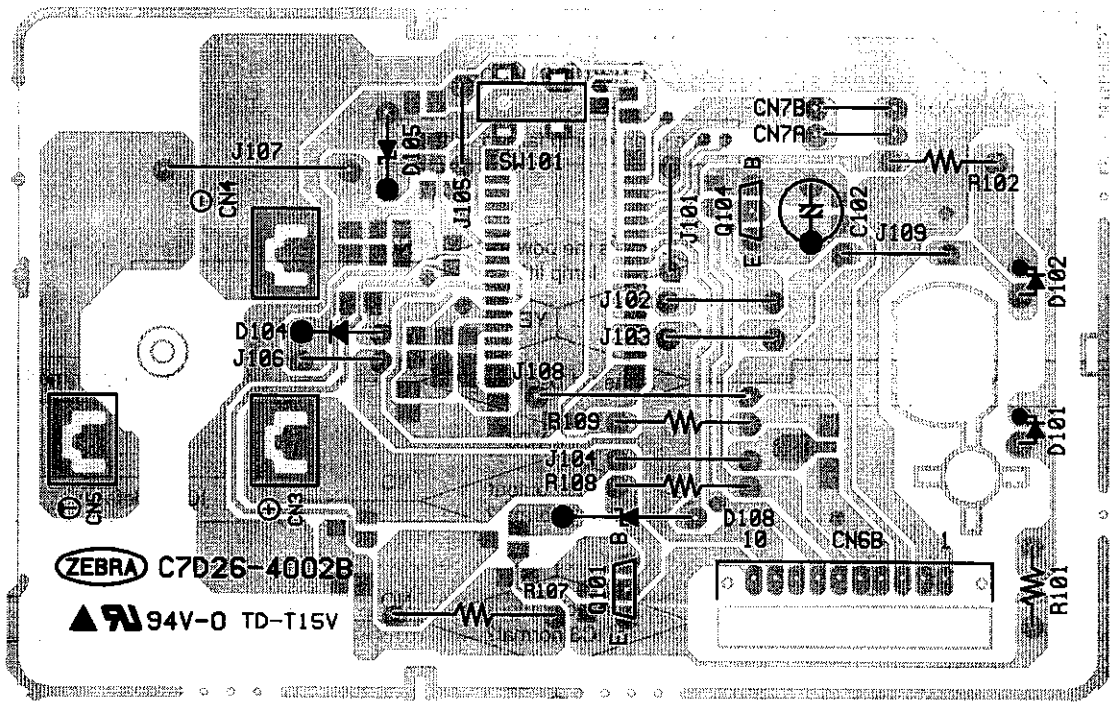


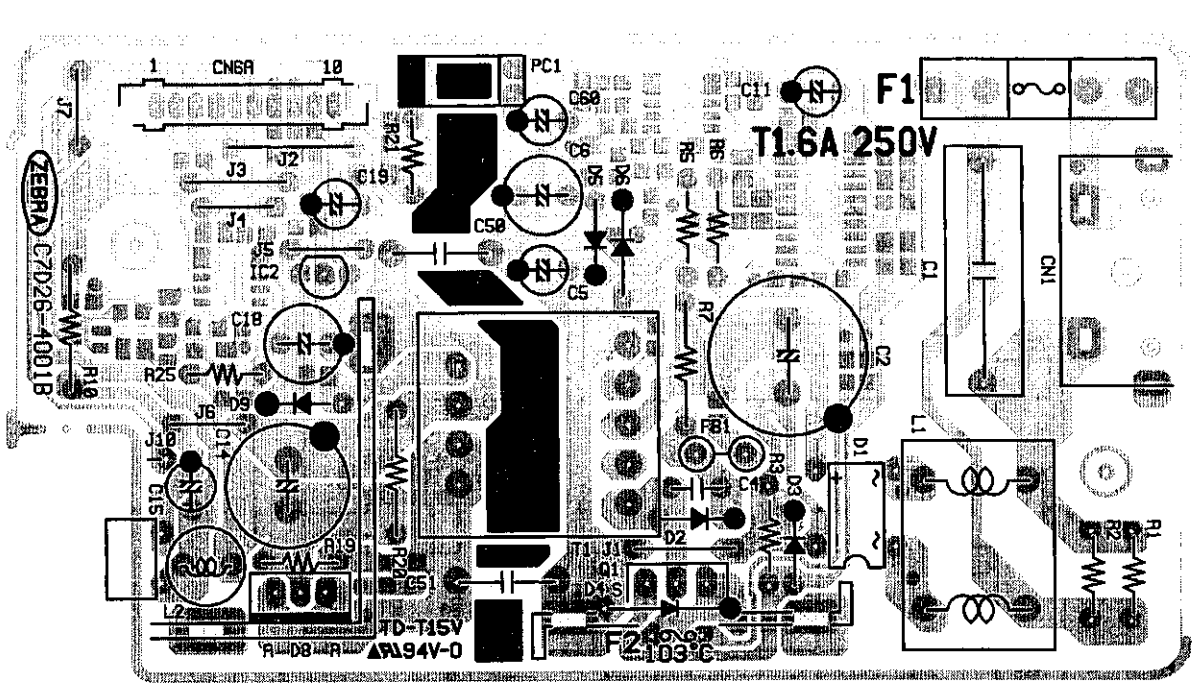
Charging Mode

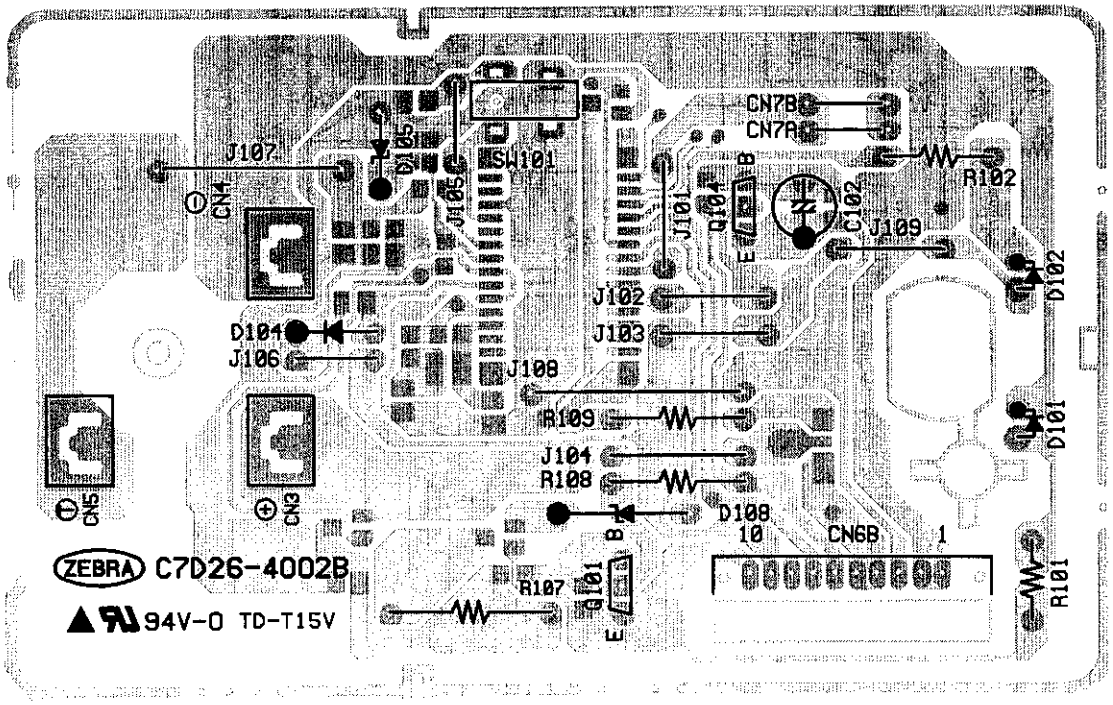


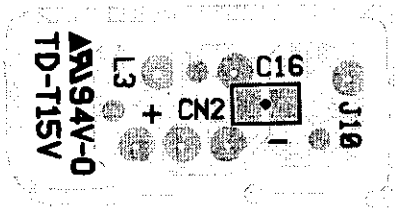
12-2. AC ADAPTER P.W.B.



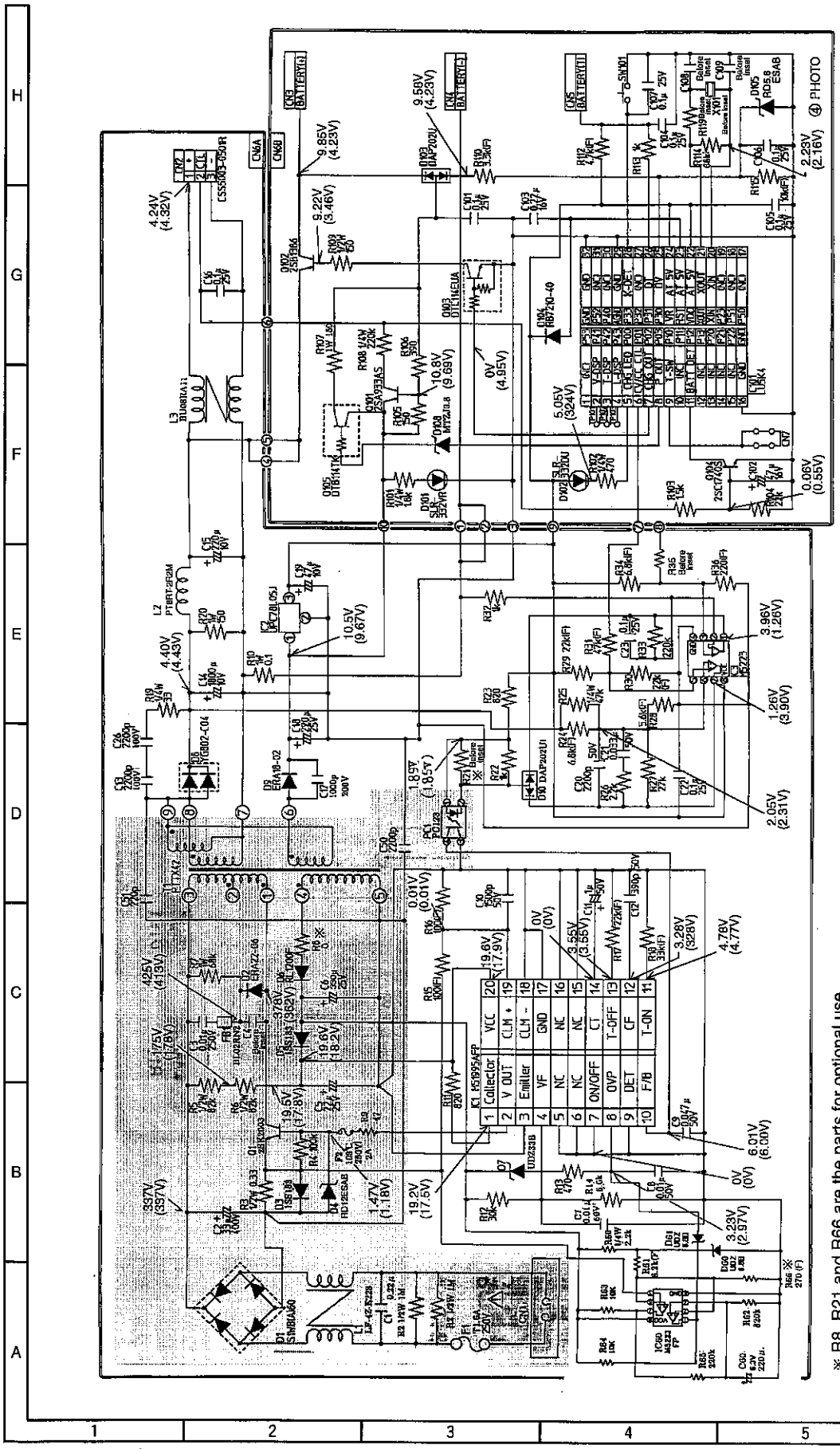



CN6A
PC1
F1
T1.6A 250V
ZEBRA C7D26-4001B
TD-T15V
94V-0
F2 T3.15A


CN7B
CN7A
J107
SW101
R102
C102
J109
J102
J103
D101
J106
J108
R109
J104
R108
D108
CN6B
ZEBRA C7D26-4002B
94V-0 TD-T15V
R107
R101


94V-0
TD-T15V
L3
C16
CN2
J10

12-3. AC ADAPTER CIRCUIT SCHEMATIC DIAGRAM



※ R8, R21 and R66 are the parts for optional use.

⚠ AND SHADED COMPONENTS = SAFETY RELATED PARTS

- Each voltage represents actually measured value when the unit is using 240V AC input and 3.5A ADP output.
- Parenthesized figures represent voltage values when the battery is charged using 240V AC input and 1.5A current.

Unit for resistor shall be Ω.
Resistor not specified shall be 1/10W.
Unit for capacitor shall be F.

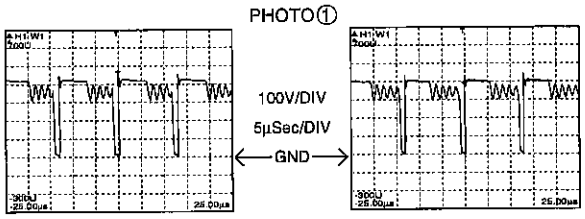
ADP mode ... AC 240V input, during 3.5A rated load
CHG mode ... AC 240V input, during 5.5A battery charging
(In parentheses)

CAUTION
*The AC plug configration varies depending on destinations.

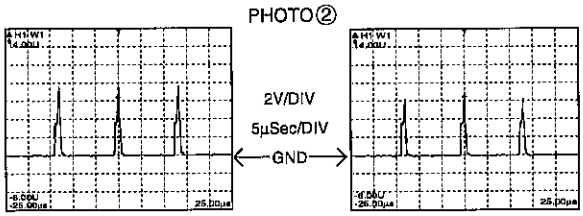
REPLACEMENT PARTS LIST/ EXPLODED VIEWS

· ADP MODE · CHG MODE

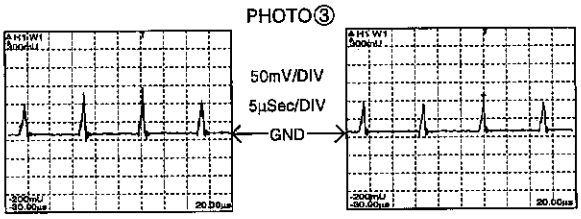
PHOTO①



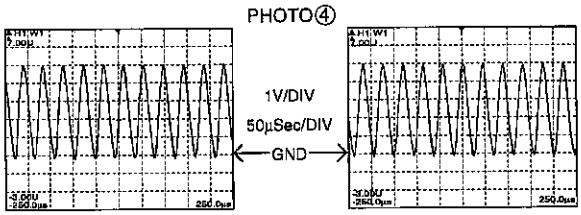
PHOTO②



PHOTO③



PHOTO④



ELECTRICAL PARTS LIST

Parts marked with "⚠" are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

"HOW TO ORDER REPLACEMENT PARTS"

★MARK : SPARE PARTS-DELIVERY SECTION

To have your order filled promptly and correctly, please furnish the following informations.

1. MODEL NUMBER
2. REF. NO.
3. PART NO.
4. DESCRIPTION
5. PRICE CODE

⚠ MARK: SAFETY RELATED PARTS

PWB ASSEMBLY IS NOT REPLACEMENT ITEM

Ref. No.	Part No.	★	Description	Code
INTEGRATED CIRCUITS				
IC1	95KUCY0031AK		M51995AFP-600C	AM
IC2	95KUCB0068BK		UPC78L05J-2-T	AF
IC3	95KUCY0011AK		M5223FP-600C	AE
IC60	95KUCY0021AK		M5233FP-60C	AF
IC101	95KUCY0082AK		LU5K417	AP
TRANSISTORS				
⚠ Q1	95KUAG0177AZ		2SK2003-01MR	AK
Q101	95KUAA0122AK		2SA933ASTP	AC
Q102	95KUAY0063BK		2SB1386	AF
Q103	95KUAY0057AL		DTC114EUA	AC
Q104	95KUAC0034EL		2SC1740S	AD
Q105	95KUAY0069AK		DTB114TK	AD
DIODES				
⚠ D1	95KUBB0148DZ		S1WB(A)60	AF
⚠ D2	95KUBC0169CK		ERA22-06	AC
⚠ D3	95KUBA0011AK		1SS133-T-72	AB
⚠ D4	95KUBDAK120C		RD12ESAB2	AB
⚠ D5	95KUBA0011AK		1SS133-T-72	AB
⚠ D6	95KUBC0320AZ		RL1200F-F	AD
D7	95KUBXAN330C		UDZ TE-17 33B	AC
D8	95KUBA0040AZ		YG802C04R	AG
D9	95KUBC0221AK		ERA18-02	AC
D10	95KUBY0032AB		MA142WA	AE
D60	95KUBXAR6R8C		UDZ TE-17 6. 8B	AC
D61	95KUBXAR6R8C		UDZ TE-17 6. 8B	AC
D101	95KUDC0221ZZ		GL3PR8	AC
D102	95KUDC0222ZZ		GL3HS8	AD

Ref. No.	Part No.	★	Description	Code
D103	95KUBY0032AB		MA142WA	AE
D104	95KUBA0036AK		RB721Q-40-T-72	AD
D105	95KUBDAK5R6C		RD5. 6ESAB2	AB
D108	95KUBDAK6R8C		RD6. 8ESAB2	AC

COILS AND TRANSFORMER

Ref. No.	Part No.	★	Description	Code
⚠ T1	95K829065006		Transformer	BB
⚠ L1	95KUKZ0837ZZ		Chock Coil	AG
L2	95KUKZ0844ZZ		Chock Coil	AD
L3	95KUKZ0707ZZ		Chock Coil	AH

CAPACITORS

Ref. No.	Part No.	★	Description			Code
⚠ C1	95KUGFM224JN		0.22µF	250V	AC	AG
⚠ C2	95KUGAQ330UY		33µF	400V	Electrolytic	AH
⚠ C3	95KUGXFRM103		0.01µF	250V	Ceramic	AD
C5	95KUGAD220HN		22µF	25V	Electrolytic	AD
⚠ C6	95KUGAD331TT		330µF	25V	Electrolytic	AD
C7	95KUGXABF103		0.01µF	50V	Ceramic	AB
C8	95KUGXABF103		0.01µF	50V	Ceramic	AB
C9	95KUGXFLF473		0.047µF	50V	Ceramic	AB
C10	95KUGXABF152		1500pF	50V	Ceramic	AB
C11	95KUGAF010HN		1µF	50V	Electrolytic	AB
C12	95KUGXAQF391		390pF	50V	Ceramic	AB
C13	95KUGXFSJ222		2200pF	100V	Ceramic	AB
C14	95KUGAB182VD		1800µF	10V	Electrolytic	AF
C15	95KUGAB221VA		220µF	10V	Electrolytic	AD
C16	95KUGXFLD104		0.1µF	25V	Ceramic	AC
C17	95KUGXFSL102		1000pF	200V	Ceramic	AB
C18	95KUGAD221HN		220µF	25V	Electrolytic	AC
C19	95KUGAB470HN		47µF	50V	Electrolytic	AB
C20	95KUGXABF222		2200pF	50V	Ceramic	AB
C21	95KUGXABF333		0.033µF	50V	Ceramic	AB
C22	95KUGXFLD104		0.1µF	25V	Ceramic	AC
C23	95KUGXFLD104		0.1µF	25V	Ceramic	AC
C24	95KUGXFSJ222		2200pF	100V	Ceramic	AB
⚠ C50	95KUGCZ222HB		2200pF	50V	Ceramic	AE
⚠ C51	95KUGCZ221HA		220pF	50V	Ceramic	AE
C60	95KUGAA221HN		220µF	25V	Electrolytic	AC
C101	95KUGXFLD104		0.1µF	25V	Ceramic	AC
C102	95KUGAC470KF		47µF	10V	Ceramic	AC
C103	95KUGXFLC224		0.22µF	10V	Ceramic	AC
C104	95KUGXFLD104		0.1µF	25V	Ceramic	AC
C105	95KUGXFLD104		0.1µF	25V	Ceramic	AC
C106	95KUGXFLD104		0.1µF	25V	Ceramic	AC
C107	95KUGXFLD104		0.1µF	25V	Ceramic	AC

RESISTORS

Ref. No.	Part No.	★	Description			Code
⚠ R1	95KUEEC105CH		1M	1/2W	±5%	AB
⚠ R2	95KUEEC105CH		1M	1/2W	±5%	AB
⚠ R3	95KUEZ0569ZZ		0.33	1/2W	±5%	AB
⚠ R4	95KUEXCAA104		100k	1/10W	±5%	AA
⚠ R5	95KUEEC823BU		82k	1/2W	±5%	AB
⚠ R6	95KUEEC823BU		82k	1/2W	±5%	AB
⚠ R7	95KUEFD683BH		68k	1W	±5%	AB
⚠ R8	95KUEXCAA000		0			AA
⚠ R9	95KUEXCAA470		47	1/10W	±5%	AB
R10	95KUEFDR10CF		0.1	1W	±5%	AC
R11	95KUEXCAA821		820	1/10W	±5%	AB
R12	95KUEXCAA303		30k	1/10W	±5%	AB
R13	95KUEXCAA471		470	1/10W	±5%	AA
R14	95KUEXCAA562		5.6k	1/10W	±5%	AA
R15	95KUEYAA1000		100	1/10W	±1%	AB
R16	95KUEYAA1000		100	1/10W	±1%	AB
R17	95KUEYAA2202		22k	1/10W	±1%	AB
R18	95KUEYAA3302		33k	1/10W	±1%	AB
R19	95KUEEB330DC		33	1/4W	±5%	AB
R20	95KUEFD151BH		150	1W	±5%	AB
R22	95KUEXCAA102		1k	1/10W	±5%	AA
R23	95KUEXCAA821		820	1/10W	±5%	AB
R24	95KUEYAA6801		6.8k	1/10W	±1%	AB
R25	95KUEEB473DC		47k	1/4W	±5%	AB
R26	95KUEXCAA222		2.2k	1/10W	±5%	AA
R27	95KUEXCAA273		27k	1/10W	±5%	AA
R28	95KUEYAA5601		5.6k	1/10W	±1%	AB
R29	95KUEYAA2202		22k	1/10W	±1%	AB
R30	95KUEYAA2202		22k	1/10W	±1%	AB
R31	95KUEYAA4702		47k	1/10W	±1%	AB
R32	95KUEXCAA102		1k	1/10W	±5%	AA
R33	95KUEXCAA224		220k	1/10W	±5%	AB
R34	95KUEYAA6801		6.8k	1/10W	±1%	AB
R36	95KUEYAA2200		220	1/10W	±1%	AB
R60	95KUEXDAA222		2.2k	1/4W		AC
R61	95KUEYAA8201		8.2k			AB
R62	95KUEXCAA824		820k			AB
R63	95KUEXCAA103		10k			AA
R64	95KUEXCAA103		10k			AA
R65	95KUEXCAA224		220k			AB
R66	95KUEYAA2700		270			AB
R101	95KUEEB182DC		1.8k	1/4W	±5%	AB
R102	95KUEEB471CX		470	1/4W	±5%	AC
R103	95KUEXCAA152		1.5k	1/10W	±5%	AA
R104	95KUEXCAA223		22k	1/10W	±5%	AA
R105	95KUEXCAA151		150	1/10W	±5%	AB
R106	95KUEXCAA391		390	1/10W	±5%	AA

Ref. No.	Part No.	★	Description	Code
R107	95KUEFD151BH		150 2W ±5%	AB
R108	95KUEEB224DC		220k 1/4W ±5%	AB
R109	95KUEEC151CH		150 1/2W ±5%	AC
R110	95KUEYAA3301		3.3k 1/10W ±1%	AB
R112	95KUEYAA4701		4.7k 1/10W ±1%	AB
R113	95KUEXCAA102		1k 1/10W ±5%	AA
R114	95KUEXCAA683		68k	AA
R115	95KUEYAA1002		10k 1/10W ±1%	AB

MISCELLANEOUS PARTS

Ref. No.	Part No.	★	Description	Code
⚠ FB1	95KBFZ89322Z		Balun	AD
⚠ PC1	95KUDC0223ZZ		Photo Coupler	AF
⚠ CN1	95KPEZ0097ZZ		Plug	AH
CN2	95KPEZ0088ZZ		Socket	AH
CN3	95KFBZ0148ZZ		Terminal	AF
CN4	95KFBZ0148ZZ		Terminal	AF
CN5	95KFBZ0148ZZ		Terminal	AF
CN6	95KPCZ0204ZZ		Connector	AH
CN6	95KPCZ0203ZZ		Connector	AG
CN7	95KPZZ0603ZZ		JP	AA
⚠ F1	95KPJCTZ1601		Fuse T1. 6A, 250V	AE
⚠ F2	95KPJT0175ZZ		Fuse 2A, 250V	AF

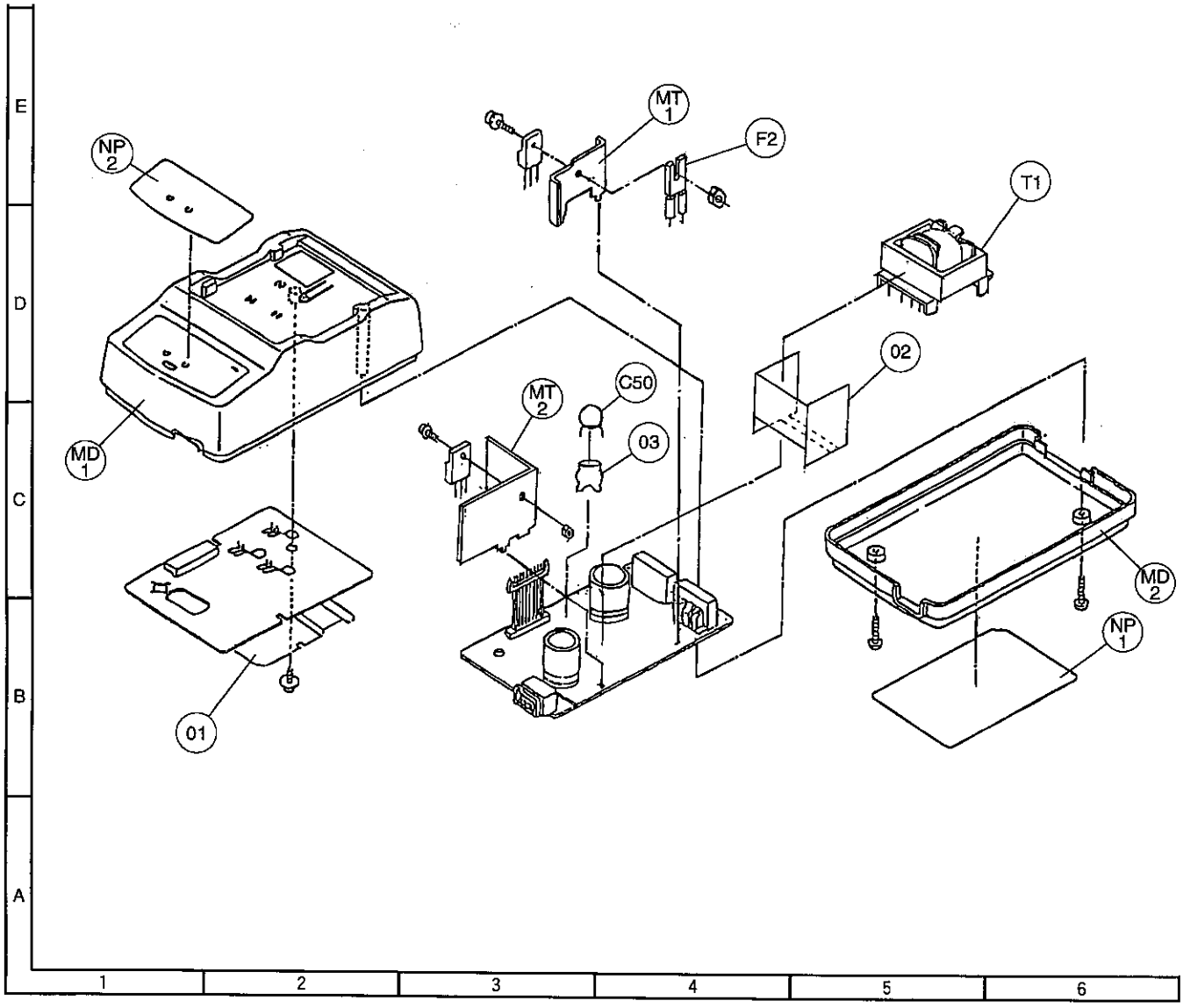
CABINET PARTS

Ref. No.	Part No.	★	Description	Code
MT1	95KLRZ6324ZP		Sink, Heat	AE
MT2	95KLRZ6346ZK		Sink, Heat	AG
MD1	95KMRZ5576ZZ		Case Upper	AM
MD2	95KMRZ5560ZZ		Case Lower	AG
NP1	95KSBB2057ZZ		Label (0281TAZZ)	
NP1	95KSBB2054ZZ		Label (0280TAZZ)	
NP2	95KSBB1951ZZ		Label	AM
FH1	95KPZZ0837ZZ		Fuse Holder	AC
01	95KGZZ5307ZZ		Insulator	AG
02	95KGZZ5309ZZ		Insulator	AF
03	95KPZZ0829ZZ		Condenser Cover	AE

—— End of Electric Parts ——

—— End of Cabinet Parts ——

UADP-0280TAZZ
UADP-0281TAZZ



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